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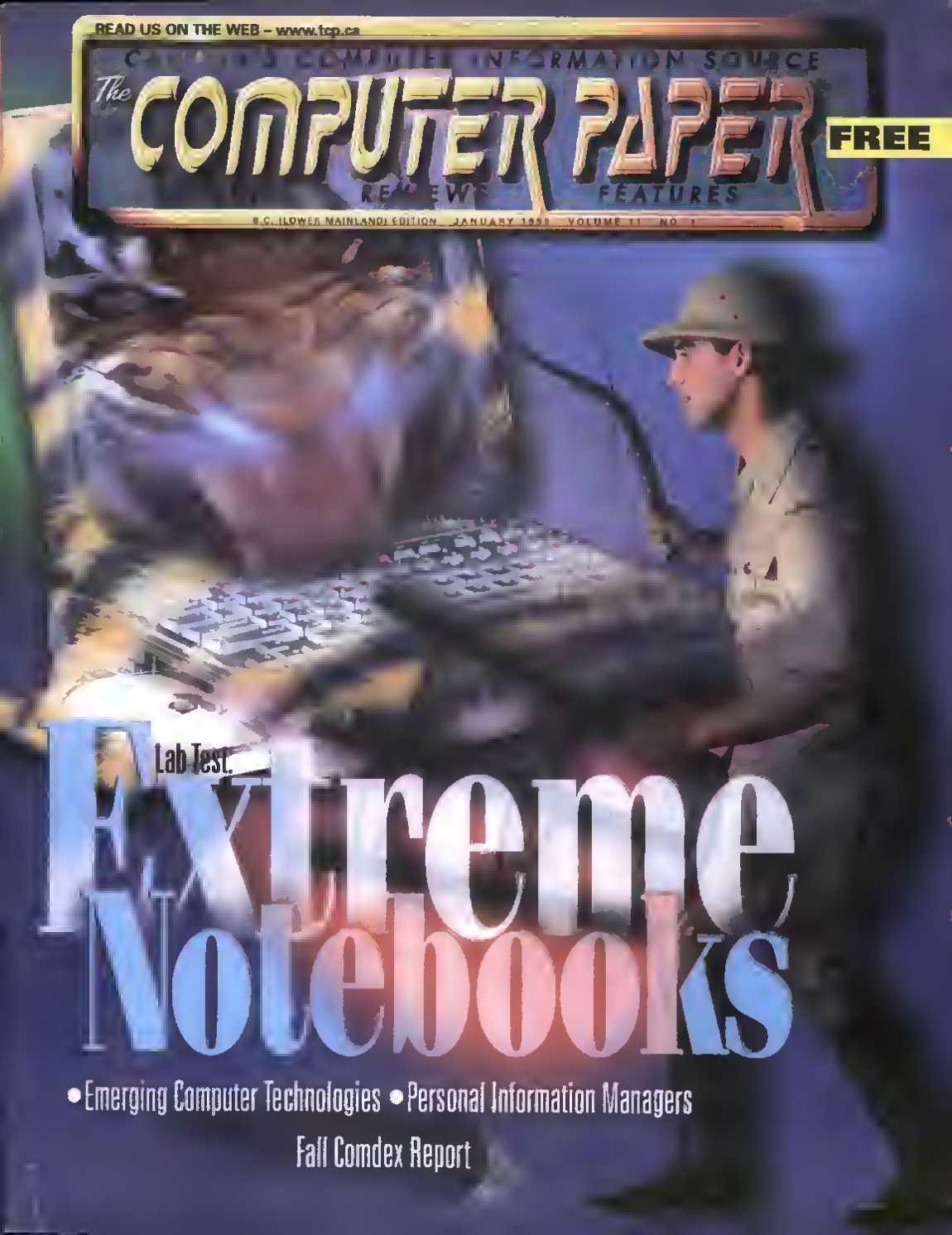

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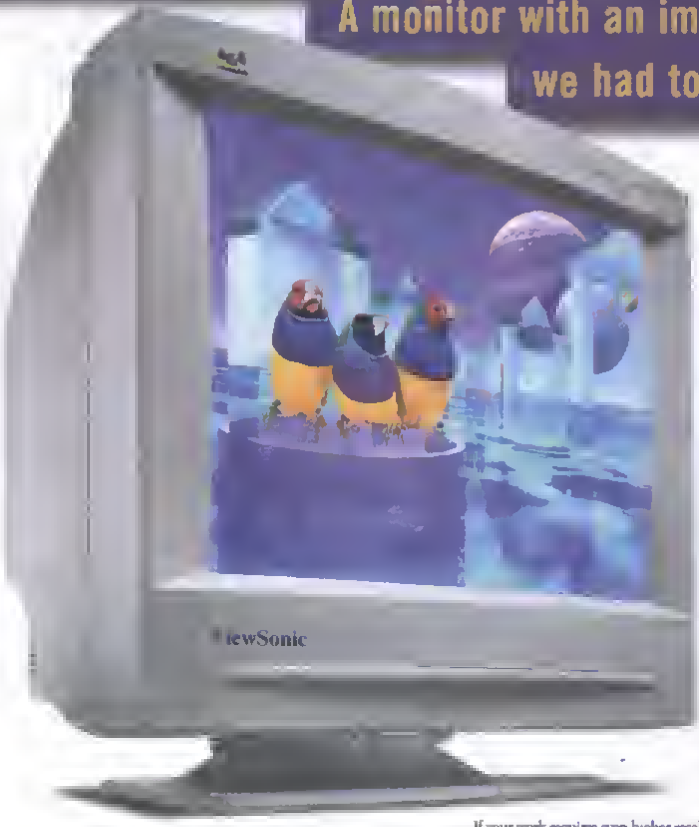

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FROM THE EDITOR

On the road again

It's getting a lot easier to take your computing with you when you travel. And, with so many ways to get connected, it's also a lot easier to stay in touch with home base

As I was preparing for the annual Las Vegas Comdex show in November, I had a short list of needs. Because we were beginning our January editorial cycle, I needed to tap into our email system to download stories that writers were filing. I also needed a computer with a good word processor and screen, so I could look at the submissions.

Having lugged some pretty heavy portables over the years, I jumped at the chance to borrow a Libretto 50CT from Toshiba. I was more than willing to trade a small (but bright) screen and keyboard for the 900 g (2 lb.) form. It was already loaded with a good word processor and a Web browser. The browser was also all I needed for email. Because our email system is POP3 compliant, I could use any Internet mail package, including the mail client of the Web browser on the Libretto, to retrieve my mail.

Constantly constrained

The Libretto was light enough to actually carry around all day, but the fatal flaw in that scenario was the paltry one hour of battery life. That's compounded by the fact that you can't recharge the battery while you're using the computer. (Fortunately the new model 70 overcomes this problem—and offers a faster MMX processor and larger hard drive.) I ended up carrying my Casio Windows CE-based handheld computer, and used the Toshiba only in the hotel or where there was a convenient AC outlet nearby

The Cassiopeia has been a constant companion during the past year, and has proven to be a useful gadget. But it's far from perfect. Even when powered by version 2.0 of Windows CE, these little devices have inherent limitations—small screen and keyboards, for example—that will be solved only by a larger wrapper. But with the larger case comes less pocketability

There were a few examples of bigger Windows CE devices at the show—NEC's latest MobilePro 700 comes to mind. This model is a bit smaller than the Libretto and lighter at 675 g (1.5 lb.), and NEC claims it will run for about 20 hours on the AA batteries. It will also be less expensive (around US$800) than ultralight notebooks. On the down side, it has just a 640x240 pixel greyscale screen (a color model is coming), and if you want to use a non-Microsoft office suite, you're out of luck.

Coming down from the other end, I also saw Pentium-powered ultralights from Panasonic and Hitachi that will compete with the Libretto Maybe we'll eventually find an ideal device somewhere between the larger handhelds and the smaller notebooks, but until then, be prepared to make your choice based on the constraints that bug you the least.

True to form

But at this year's Comdex, if you wanted to just read and respond to email (as opposed to actually downloading files) you didn't have to carry any computing device at all, thanks to Novell

Novell mustered an impressive presence, proclaiming that the company which once owned the PC LAN (local area network) market was still a force to be reckoned with Its Connecting Points intranet provided all Comdex registrants with an email account. You just swiped your Comdex ID badge in the card reader at one of the 250 PCs on the network to log in. The Comdex organizers were anticipating more than 200,000 registrants, and Novell estimated the system processed about 6 GB of information a day, and by the end of the show, had carried 5.6 million messages.

The Comdex mail account contained a few Comdex-specific broadcast messages and schedules of varying interest, but by changing the mail server settings, people with POP mail accounts could also access their personal mail right from the show floor. For example, I typed in the particulars for *The Computer Paper*'s mail server, and was able to access my TCP mail account. It's not hard to imagine that in a couple of years, we'll be able to access our mail from public phones wherever we happen to find ourselves

Besides Novell, another company that was showing some of its old form was IBM. In its trade show exhibit, IBM seems to have finally shaken the desktop OS/2 colic of a couple of years ago, and is again on a higher road befitting an industry leader The OS/2 gambit was a noble one, but left IBM constantly reacting, me-too fashion, to Microsoft's OS agenda. At this Comdex, Big Blue was one of the agenda setters. In a display reminiscent of those car-of-the-future Autoramas that the auto makers used to host, IBM showed some intriguing glimpses into the future of computing—including a network-enabled car of the future and a computing environment responsive to a person's voice and gestures.

Something else we might be seeing in 1998 are 3D displays. Sanyo had a prototype on display in its booth. The LCD is sandwiched between what Sanyo calls a double image splitter that separates the multiplexed image into 3D Then a head tracking system expands the effective stereoscopic viewing area so that a 3D effect can be experienced without the viewer having to wear polarizing glasses. The prototype has a fixed viewing distance of 60 cm (two feet), and Sanyo is targetting applications like medical imaging and virtual reality

Back to reality

It's easy to get caught up in the dazzling array of new products being trumpeted at Comdex. However, the stuff that we have to take care of to be effective and productive humans remains fairly basic: how to stay organized, how to plan, how to follow through on our good intentions.

Leading off our business section this month is a roundup of goal-setting software. If you're the kind of person who makes—then breaks—New Year's resolutions every January, this might be just what you need to make 1998 different.

Enjoy the issue

David Tarnin,
Editor

LETTERS

Last Byte take a hike

Jeff Evans (see *Last Byte* in the Dec. issue) incorrectly implies that Apple's acquisition of NeXT is wasted as "the next MacOS will contain a much higher component of the original MacOS as opposed to the...NeXT OS" (actually OpenStep) This last statement is very ambiguous and open to misinterpretation in light of what Apple is actually doing

What Jeff fails to realize, or at least to point out, is that Apple is pursuing a dual OS strategy, very much like Win95 and NT Steve Jobs has said that the current MacOS will continue for the foreseeable future (with no NeXT code at all) while the NeXT-based Rhapsody OS will start out as a high end and server OS and then gradually migrate to the average desktop The developer release of Rhapsody was on time last month and just this week the "Blue Box" MacOS compatibility component of Rhapsody was made available for developers. The NeXT software is being put to very good use, thank you.

Another inaccuracy in Mr. Evans writing was his statements about MacOS licensing. He states that UMAX no longer is licensed to sell the MacOS with its machines. This is not so UMAX is the only remaining large Mac cloner that is still licensed and will continue to be until July of 1998

If Apple continues to lose money the way it has done and does die (which might take about four to five years) I don't think the Mac will disappear any time soon. With 50 million devoted Mac users around the world, many high-tech firm with enough bucks would love to purchase Apple's crown jewels and have that sort of brand loyalty and recognition. Heck, even Bill Gates might do it. Just think, Win95, NT and Microsoft Mac! At least he would mar last the Mac properly

Barrie Ladner, B.C.

More on hard drive upgrades

In the letters section in December TCP, Tony Hutson asked if he should upgrade his hard drive on his 486DX66 or buy an new system. In TCP's response, you forget to mention that some older BIOSes on 486 systems don't support hard drives larger than 540 MB (actually the limit is 1,024 cylinders, 16 heads, and 64 sectors)

If this is the case, the hard drive can be used as a 540 MB HD, though it would have to be reformatted once the system is upgraded to utilize the rest of the space on the drive. If the system has such a limitation, my recommendation would be to either pick up a second used 540 MB hard drive, or upgrade the CPU, motherboard, and (if necessary) video card and RAM when upgrading the hard drive

Roger Horner

Oldies are still goodies

Why don't you run an article about those of us, and I suspect there are many, who are still using older machines?

I work on a 25 MHz 386DX, which has 4 MB of RAM and an 83 MB double-spaced hard drive. It is loaded with Windows 3 11 and Norton Desktop, which work quite happily with my old DOS-based Word Perfect 5 1 (I am

Continued on page 8

COMPUTER PAPER Volume 11, No. 1, January 1998

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Affordable video editing and much more!

Dear Grandma and Grandpa,

Thanks so much for the best Christmas present ever! As you can see from the video cassette I'm sending you, I've already made a cool home movie with the new Matrox Rainbow Runner Studio. It's the best thing we ever got for our PC. Besides the movie, I've video-conferenced over the Internet with my pen pal in Paris, designed some thank-you cards with my picture (this is one of them) and grabbed some TV clips from the news for my school report on the Prime Minister. What's great is that the Rainbow Runner Studio is so easy to install and use - even Dad figured it out! It also comes with free software for easy video editing and more.

Gotta go - I'm starting to make my first "real" movie on the street with some friends. Johnny's dog is gonna be in it too!

Love,

Max

PS. Did you know Matrox has a new 3D gaming card called "Matrox m3D" for only $149? my birthday is only 3 months away.

matrox

Matrox Rainbow Runner Studio

- Ideal for video and image editing, video conferencing, PC to TV video, includes MPEG2
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LETTERS

Continued from page 6

a writer) My Internet needs are served with Eudora email program, Free Agent newsreader, and an excellent browser called Opera. I recently installed a fast 33 6Kbps internal faxmodem, and will soon add another 4 MB of RAM.

My other programs include Quicken astronomical software, a genealogy program, and many others.

I would love to have a new Pentium and all the bells and whistles which go with it. Sooner or later, I know I will succumb to the inevitable and join the crowd. Right now however, I am cussed enough to thumb my nose at Microsoft and Intel while I continue with what I need rather than what I want—and there is a big difference.

Meanwhile, it comforts me to know there are software developers, such as Opera and Geoworks who continue to cater to us dinosaurs.

J. Brian Clarke Alberta

The need for bus speed

The following question and answer is between reader John Forshaw and TCP senior editor, Graeme Bennett:

JF: How do the new Ultra DMA drives compare with SCSI when used with high-end audio and video applications? If I can only afford IDE, is there a superior drive to consider as an investment?

GB. *You need an Ultra DMA-compatible system such as one of the newer motherboards with the so-called "LX" chipset. Ultra DMA (also known as Ultra ATA or Ultra IDE) is faster than SCSI in some cases and definitely cheaper. Dell Canada, for example, charges more than $530 extra for a comparable SCSI drive+controller in their PII systems. The latest DV magazine has an ad for an Ultra IDE RAID system that it claims outperforms SCSI. I've seen Ultra IDE claims of up to 33MB/sec., but such "burst" speeds are not likely to be sustainable in real-world use. I have an Ultra Wide SCSI controller and drive in my PC and I can't get half that when recording video or audio. Bear in mind that SCSI may pay off in other ways, such as in reduced IRQ and slot usage. If you are doing AV work and/or have a non LX chipset, a good AV-certified SCSI drive is a safe bet.*

JF: Is FAT32 slower than FAT16? And can I have drive C formatted with FAT32 and drive D using FAT16?

GB. *Yes and Yes. It is not noticeably slower in Windows, but MS warns that it is in DOS (which I don't use much, but might affect you, especially if you play DOS games). I was happy with performance of FAT32, and I had drives configured as you mention for several months. There were other issues for me, such as NT 4.0's inability to boot in dual boot (or even access) a FAT32 formatted C drive. Hence, some people leave drive C as FAT16 and format D as FAT32. I personally changed all my drives back to FAT16 using Partition Magic 3.03 so that I could use NT 4.0. NT 5.0 will have FAT32 support.*

JF: When does better floating point architecture pay off? Will the average user or power gamer really notice a difference with an Intel over its competitors?

GB. *An FPU is used for many 3D apps, audio apps, graphics programs and games. A Cyrix GX chip is very slow at FPU functions—a 166+ MHz Cyrix is like a 120 MHz Pentium processor or worse in some apps, such as a music program I use called Cubase VST. AMD K6 is not as bad and is a good choice.*

I'd go with Intel personally. Some vendors, such as Adobe, don't provide any tech support for their apps running on non-Intel chips, and some apps don't work properly on Pentium clones. Caveat Emptor.

Loves TCP's Web site

I recently accessed your Web site to get detailed technical and operational information on digital cameras and scanners. After trying to talk with sales reps from [large retail chains] and a few smaller stores I almost gave up... the sales types I found are not knowledgeable about the product's operation, features and applications. All the sales reps seem to want one thing and that is your Master Card number.

I got the information I was looking for. I am knowledgeable and am certain sales reps will find me a major problem because I know what I want and can back it up with facts. Thank you, thank you, thank you for a great Web site and the information I needed.

Dale Henning

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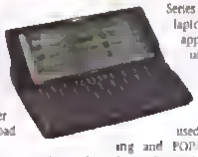
WHAT'S NEW

Psion distributes comms package for Series 5 for free • LONDON, England (NB)—Psion has unveiled its integrated communications package for its Series 5 personal digital assistant (PDA). Users will probably forgive the delay, however, as the email, fax and Web browser application is now free for the download from Psion's Web site.



The package has been designed to run on the Series 5, taking into account its laptop-style keyboard. PC-style applications and portability in use, the Series 5 email software allows users to send, receive, reply and forward messages. Standard Internet protocols are used—SMTP for message sending and POP3 for message retrieval. According to Psion, this means that, as well as the ability to use a personal Internet account, the software will work with Lotus cc:Mail, Microsoft Exchange and Lotus Notes provided the email system uses POP3 technology.

Preparing and viewing email and fax messages using the package is claimed to be very straightforward. All messages received appear in a single inbox, and all messages to be sent are deposited in a single outbox.

Contact: Psion Web site, http://www.psion.com

ViaTV Videophone from uses digicam or camcorder input • SANTA CLARA, Calif. (NB)—If you already have a digital camera, why not make it double as a videophone? That's the logic ViaTV Inc. used for two new ViaTV modular videophone products, which can use video signals from digicams or camcorders for the picture in a videophone call.

Scott St. Clair, an ViaTV spokesperson, observed that the little cameras may only save snapshots in their flash memory, but when a user aims a digital camera the image in the viewfinder is full motion video. So a digicam could serve as a camcorder if the output can be trapped, he said.

That's what the ViaTV device does. "You just put it into camera mode, hook it up to your ViaTV box, and you have full streaming video," St. Clair said.

Both of the new ViaTV videophones, have suggested retail prices under US$400. They both make the videophone link up, but the VC55 adds Web browsing. Both models are compatible with existing ViaTV videophones, which include their own video cameras.

"You can mix your audio from several different sources," said St. Clair. "You can plug a VCR into the unit and use it as a video and audio source. Then you can mix that VCR audio with the audio from the telephone, or turn the audio off and narrate the videotape yourself over the phone."

The firm says it has tested the new ViaTV devices against six digital cameras—the Sony DSC-F1 digital camera, the Nikon Coolpix 300 digital camera, the Olympus D-320L and D-220L digital cameras, the Ricoh RDC-2 digital camera and the Kodak DC210 Zoom digital camera.

All can send still images, says ViaTV. In addition, the Sony, Nikon and Ricoh can serve as video cameras during live calls, eliminating the need for a camcorder or other video camera. The Sony DSC-F1 even sends live video and still images at the same time, "for true multimedia experience," said the firm.

Corel names design contest winners • OTTAWA (NB)—Corel Corp. has named nine winners in its annual World Design Contest. The US$250,000 top prize, best of show in the graphics category, went to Hans Joachim Cardinal of Germany, who also won grand prize in the landscapes and landmarks category.

Other grand prize winners in the graphics categories were: David A. Huss of the U.S. in the people, plants and animals category, Ron Richey of Canada, in corporate identification. Among

Hans Joachim Kardinal's illustration of Orvieto, Italy was selected best of show

Continued on page 69

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What's new at Fall Comdex

BY DAVID TANAKA, JEFF EVANS, & GRAEME BENNETT

As Jason Chudnofsky, the head of Softbank Comdex, stated during his introduction to this year's Fall Comdex show there were over 10 000 new computer products unveiled at the 1997 show, ranging from cleaning supplies to digital cameras to enterprise network servers The computer industry tends to save up new product introductions for Fall Comdex, in order to gain worldwide exposure from the nearly 4 000 international press representatives who flock to the show

This annual flood of new products is a happy hunting ground for both journalists and end users, and tends to overshadow the regular local flow of product announcements. This year, there were so many noteworthy new products at Comdex that we've turned over virtually the entire What's New section to the highlights from the show, and expanded the section beyond its normal length Here's what's coming in 1998. Hold onto your hats, and enjoy!

Newest monitors feature 19 inch CRT, and 15-inch, 16-inch LCD Models

At this year's Fall Comdex, one of the strongest product categories was computer monitors, especially new 19-inch and LCD models. The recently introduced 19-inch CRT (cathode ray tube) size format has proven to be a big hit with users and several major vendors had 19-inch monitors on display, including many with advanced features, such as USB (Universal Serial Bus)

EIZO Nanao Technologies announced the FlexScan FX-D7, a flat-square shadow-mask, 19-inch model with 17 8-inch viewable area. According to Kyle Shimura, general manager of EIZO, "The FlexScan FX-D7 is the perfect alternative for 'power users' who are looking for the larger display area afforded by 21-inch class models" The FX-D7 has an integrated USB hub, which allows up to four other USB-compliant peripherals, such as printers, scanners and digital cameras, to be controlled and accessed via a high-speed USB link to the user's PC. The estimated price for the FX-D7 is about US$1,079

Optiquest also announced a 19-inch offering, the V95 advanced performance 19-inch (18-inch viewable) model With resolution up to 1,600x1280, high-contrast screen, and OnView digital controls, Optiquest claims the V95 has "near 21 inch class" performance at half the price about US$945

In the flat panel display category, Sceptre Technologies declared the "Sixth Generation" of flat panel technology with the release of its 16 1-inch ST 16 LCD monitor. With a full 16 1 inch viewable area, the ST 16 has comparable display size to a 17-inch CRT monitor. It can display resolutions up to 1,280x1,024 pixels, and a pelette of 16 million colors. Sceptre also announced its FT 15+ LCD flat panel monitor. The FT 15+ has a 15.1-inch diagonal size, and comes with a two-speaker stereo with amp EIZO introduced the FlexScan L34, a 15-inch LCD monitor, with maximum resolution of 1,024x768, and the ability to display up to a 16 million colors.

The 19-inch monitor category has been quite successful in the months after its appearance in the market because of the good price/performance and small footprint of the 19-inch form factor compared to the 20-inch or 21-inch monitor categories For all the attention given to flat panel LCD monitors, sales have remained at a very modest level, due to the higher prices of LCDs compared to traditional monitors.

However, strong price drops are expected in 1998 Sceptre has jumped the gun, dropping the price of the 12.1-inch LT12S from US$1499 to US$999 The 14.5-inch FT 15 model has dropped from US$2,495 to US$1,595 Even at these lower prices the cost differential between CRT (cathode ray tube) monitors and flat panel monitors is still quite extreme Sceptre expects LCD flat panel monitor price drops to occur regularly over the next couple of years, until LCDs are more competitive with the older monitor technology Sceptre also announced a special incentive program for non-profit organizations that need zero-radiation monitors, but have limited budgets.

Contact: EIZO Web site: http://www.eize.com
Sceptre Web site http://www.sceptretech.com
For information on incentive program for non-profit organizations Tel 888-LCD-FT15

Sceptre announces proposed expansion and new scanner line

Sceptre Technologies, a company that has recently moved into the "top five" of monitor vendors in the Canadian market, announced a vigorous expansion plan for here and in the United States. The company has recently doubled the size of its California headquarters to 200 000 square feet and according to company president Stephen Liu, "Our Canadian clients are a very important part of Sceptre's international business We would like to locate a site commensurate with the status of the Canadian market "

At the same time, Sceptre announced the launch of a line of high performance but budget priced, color flatbed scanners part of the company's strategy of becoming a complete graphics technology solution provider. The new scanners include the Models S300, S600 and S1200 The S300 offers 300x600 dpi optical scanning resolution (up to 2,400 dpi with interpolation), an EPP parallel port interface and weighs only 2 5 kg (5 72 lb.)

The Model S600 offers 600x600 dpi optical resolution, and the Model S1200 has 600x1,200 optical resolution. Both the S600 and S1200 models weigh 4.5 kg (10.12 lb.), and come with a SCSI II interface card and cable. Prices for the new scanners are yet to be announced.

In addition, Sceptre announced that test results by the National Software Testing Laboratories (NSTL) declared the Sceptre Soundx S500 notebook PC, based on the Pentium 233 MHz processor, the fastest notebook surveyed in its September 1997 tests

Contact: Sceptre
Web site: http://www.sceptretech.com

Mitac's all-in-one slim LCD PC

Comdex was also the site for some interesting new takes on the form factor of the traditional desktop PC Mitac International showed a super compact PC workstation, consisting of a 13 8-inch (or optional 15-inch) flat panel display, mounted on top of an Aptiva-style media console, with the main chassis of the PC mounted behind the LCD display This arrangement makes for an extremely compact footprint on the user's desktop, amounting to about one third of the space requirement of a typical desktop PC according to Mitac.

The LCD PC also only consumes about one third of the amount of electrical power of other PCs, and emits no electromagnetic or X-ray radiation The LCD PC is based on either a Pentium MMX or an AMD K6 processor, with up to 128 MB RAM and 512KB cache, and supports LAN 10/100baseT and 56K faxmodem connection. It comes with built-in speakers, 3D sound output and a microphone voice application Mitac also showed its Mitac 6031 notebook, intended to offer mobile teleconferencing capability along with standard business applications

Contact: Mitac, Web site: http://mitac.mic.com tw/

LynxE chip offers 192-bit architecture, reduced power consumption

Silicon Motion, Inc (SMI), a newly established computer chip maker specializing in high performance notebook PC and "entertainment appliance" technology, has added a new LynxE graphics chip to its line of Lynx multimedia controllers.

SMI claims the new chip supports simultaneous displays on two different screens (any combination of CRT, LCD or TV set), with different refresh rates Images and resolutions on each screen Lynx claims the architecture is ideal for videoconferencing, desktop publishing, and handheld computing. According to Wallace Kou, president and founder of SMI, "With the new LynxE chip, we have not only retained the most user friendly features of our earlier Lynx device, but we have also shrunk the die size, designed in several performance enhancements, and addressed the Intel Mobile Power Initiative by maximizing power savings while embedding 2 MB of DRAM "

Under the initiative, 2 6 watts is the recommended allocation for the graphic subsystems of notebook PCs in 1998 The LynxE,

according to SMI, requires less than half that amount making for significant increases in potential battery life

Contact: SMI Web site: http://www.siliconmotion.com

Sigma designs second-generation REALmagic board

Sigma Designs the original leader in MPEG-1 digital video upgrade kits has just announced its REALmagic Hollywood 2 card, a new PCI bus combo card that is both a DVD drive controller and MPEG 2 playback card The new card is being offered to makers of DVD upgrade kits and PC system integrators as a low-cost, elegant solution for enabling PC users to play DVD movies and view them on both a PC monitor and a home TV set.

Contact: Sigma
Web site: http://www.sigmadesigns.com

Palm sized Video Sphinx Pro features MPEG video capture for US$399

FutureTel one of the more experienced developers of MPEG video solutions for corporate, industrial and broadcast video applications, has announced its new Video Sphinx Pro, "an advanced A/V encoder and software suite." The VideoSphinx Pro is a palm-sized hardware device, which attaches to any compatible notebook or desktop PC's parallel port, and enables the user to perform real time audio and MPEG-1 video digitizing from a variety of sources, such as camcorders VCRs and laser disc players.

According to Max Hata chief executive officer of FutureTel "The Video Sphinx Pro marks a major but inevitable shift in the video industry, as the convergence of computer and video technology finally enables a general audience to produce, edit and deploy high-quality video quickly and cost-effectively Sphinx is the first generation 'mass market' offspring of FutureTel's top-tier technology, and because this is very much a product built from the ground up, we are confident that users—from business personnel to home users—will immediately recognize its exceptional quality and robustness."

The Video Sphinx Pro comes bundled with Kai's Photo Soap image processing software and BackStage video-editing software from Macromedia

Contact: FutureTel, Tel 888-SPHINX2 Email: info@sphinx2 com Web site http://www sphinx2 com

CyberMedia updates PC utilities, adds GuardDog

CyberMedia the creator of several very effective PC support titles, such as the First Aid automated service program, and the Oil Change automated update program, has recently announced new versions of those programs, plus an entirely new PC security product called Guard Dog Deluxe

Guard Dog Deluxe is designed as an integrated suite of protection and privacy software that detects and blocks viruses and hostile Java applets or macros, and also builds a "personal firewall" around your PC to keep its contents safe from prying eyes Features of GuardDog Deluxe range from the fairly prosaic (keeping out unwanted Internet "cookies"), to cleaning up your trail as you roam the World Wide Web to conducting full anti virus scans and creating security audits on your PC. The GuardDog Deluxe program also makes use of the CyberMedia automatic updating program to keep its anti-virus and other security features up to date by downloading and installing the latest upgrades and patches from CyberMedia s Web site

CyberMedia has also done a major update on its popular First Aid program, including an ActiveHelp Center to help PC users automatically detect, diagnose and fix most common PC problems

The new First Aid 98 version taps into CyberMedia's Active Help Center to continually ensure that the program is aware of the latest fixes for PC problems According to CyberMedia chief executive officer, Unni Warrier, "This access to ActiveHelp s rich source of up to date information places First Aid 98 in a class by itself By collaborating with our software and hardware partners, First Aid 98 users can keep up with rapid technology advances and the problems caused by these "

The latest version of CyberMedia's Uninstaller program, 4 5, also uses automatic update technology to make clean, complete uninstalling of unwanted software even safer and easier. One reviewer claimed it is "even more careful than Quarterdeck's CleanSweep 95 and Remove-It, so if you want to reclaim hard disk space with a minimum of nail-biting, give Uninstaller a close look." ➤

Perhaps of most interest is the latest version of the OilChange automatic updating software for owners of the previous version, the new Oil Change will automatically update itself to the current version, which features a much simplified, intuitive user interface.

Contact: Cybermedia,
Web site: http://www.cybermedia.com

O1 announces Communicate! Pro

Canada's O1 Communique Laboratory Inc. has just announced the latest version of its popular Communicate Fax/Telephony program, which includes such features as remote dial-in management, call logging, Internet Phone, Web browsing and email, as well as full faxing and scanning capability.

O1's concept with Communicate! Pro is to integrate all communications functions in a single, intuitive user interface, that gives your computer screen the appearance of familiar tools such as a telephone, fax, or answering machine. Beneath the simple graphical surface, however, Communicate! Pro has a powerful software engine, controls and features such as Caller ID Support, a contact manager and scheduler and sophisticated fax tools. Additional new features include pager dispatching and fax-on-demand.

Contact: O1 Communique, Tel: 800-668-2185
Web site: http://www.o1com.com

Diamond introduces two-line, 112Kbps SupraSonic II modem

Diamond Multimedia has announced an ingenious new product: the SupraSonic II modem, which allows PC users with access to two regular analog phone lines to combine the maximum data transmission speeds of both lines to give up to 112Kbps transmission speeds. The SupraSonic II comes with user-controllable software that will, for example, allow incoming or outgoing voice phone calls to take over one line, and then resume the modem's use of the second line when the call is completed.

The SupraSonic has two 56Kbps modems on a single card, using a single ISA slot and a single IRQ. A unique solution to the problem of getting near-ISDN performance out of regular phone lines and an inexpensive (US$199) modem, the SupraSonic II is a very clever concept, nicely executed.

Contact: Diamond Multimedia,
Web site: http://www.diamondmm.com

Logitech unveils "cordless desktop" with wireless keyboard mouse combo

Logitech used the Fall Comdex as the platform for launching a major new product, the Cordless Desktop for US$99. It consists of a wireless ergonomic keyboard, a wireless MouseMan Pro mouse and a dual function wireless receiver that plugs into both the keyboard and mouse ports and which can accurately receive transmissions from the keyboard and the mouse at distances of up to 1.8 m (6 ft.)

According to Logitech product manager Denis Pavillard, "By removing cable clutter the Cordless Desktop offers consumers total freedom to personalize their workspace. Unlike infrared alternatives RF means that both keyboard and mouse can address the receiver without requiring line-of-sight. This gives tremendous flexibility for moving desktop items around to suit individual needs."

Contact: Logitech Web site: http://www.logitech.com.

Pinnacle announces miroVIDEO DV300 editing solution

Over the last several years, the miro line of digital video cards has been consistent leaders in the PC video production market, winning many industry awards. At Fall Comdex, Pinnacle systems announced several major new products aimed at meeting the needs of both consumer and professional digital video producers.

The miroVIDEO DV300 is a digital video system consisting of an IEEE 1394 interface card with on-board, high-speed SCSI control, and Adobe Premier LE software, for a price of US$799.

The miroVIDEO DC30 plus is the latest version of the popular DC30 nonlinear and

Continued on page 27

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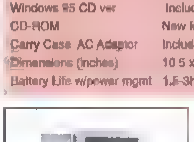
	1.3 gb	2.1 gb	3.1 gb
XP7200-166MMX	$1895	$2012	$2130
XP7200-200MMX	$1976	$2094	$2213
XP7200-233MMX	$2057	$2176	$2294
XP7200-200MMX	$2139	$2257	$2376
XP7200-233MMX	$2220	$2339	$2457
XP7200-200MMX	$2302	$2420	$2539
XP7200-233MMX	$2383	$2502	$2620
XP7200-200MMX	$2465	$2583	$2702
XP7200-233MMX	$2546	$2665	$2783
XP7200-200MMX	$2628	$2746	$2865
XP7200-233MMX	$2709	$2828	$2946

ULTINET XP6200 12.1" NTBOOKS MMX CPU (10K CDROM)

	1.3 gb	2.1 gb	3.1 gb
XP6200-166MMX, DSTN	$2397	$2512	$2740
XP6200-200MMX, DSTN	$2510	$2634	$2863
XP6200-233MMX, DSTN	$2448	$2771	$2989
XP6200-200MMX, Active	$3134	$3258	$3487
XP6200-233MMX, Active	$3270	$3395	$3623

NOTEBOOK FEATURES

	14"	12.1"
Intel CPU Options	P 166MMX P233MMX	
Int CPU L2 Cache	New models now with 512k cache	
Ram / Max RAM	32 mb / 128 mb	32 mb / 72 mb
Local Bus Video RAM	PCI 4 mb	PCI 2 mb
Max HDD 2nd Hdd	5.1 GB, Y	5.1 GB, N
Floppy Drive	1.44 mb	1.44 mb
Display	14" 1024x768	12.1" 800x600
External Monitor	simultaneous, max1024x768	
Ports	1 par, 1 ser, 1 ext video port, TV & Joystick	
PCMCIA slots	3x 16bit slots	2x 32 cardbus
SVGA PCMCIA Drivers	Included	Included
Pointing Device	Trackpad	Trackpad "
Battery Type, 2nd opt.	NiMH, LiON opt.	N MH, LiON opt.
Sound	16-bit speaker, mic	1mb wavetable
Windows 95 CD ver	Included	Included
CD-ROM	New fast 20x	New fast 20x
Carry Case AC Adaptor	Included	Included
Dimensions (inches)	10.5 x 13.1 x 2.3	9 x 12 x 2
Battery Life w/power mgmt	1.5-3hrs	1.5-3hrs



Ultinet P-233MMX Package
Awarded Editor's Choice
The Computer Paper December 1997

Notebook Review

COMPARE WHY PAY MORE & GET LESS

Processor	Intel Pentium II 233mhz MMXProcessor
Motherboard	Fastest notebook chipset for MMX series
External cache	512k synchronous with cpu bus
RAM	fast 32 mb EDO ram expandable to 72mb
Video	Trident 9385 cyber chipset, 2mb zoom capable
Display	12.1" Active Matrix non glare or radiation fast
Sound card	ESS 1788 with built in 1mb wavetable ROM
Voice/Fax/Modem	Optional 33.6 or Bus
Built in 1.44mb floppy	simultaneous with Built in CD-ROM
Hard drive	2.1gb extra ide, removable upto 5.0gb
CD-ROM drive	Built in 20X TEAC extra
Our system	Win 95 full version on CD-ROM & manuals
Extras	Built in Mic Port, speakers & microphone
	57 CD titles incl. Compteans ency or 7 title Mini Encyclopedia
	Battery Ninth 1 Ahr battery(incl 1(opt) 2nd Battery option
Warranty	1yr Parts & 3 yrs Labour
	Optional 2nd & 3yr warranty available
Service	The fastest service in Canada, over the counter or by Purolator across the country

XP6200-P166MMX DSTN	$2512	or $83/monthly
XP6200-P200MMX DSTN	$2634	or $90/monthly
XP6200-P233MMX DSTN	$2771	or $103/monthly
XP6200-P200MMX Active	$3258	or $121/monthly
XP6200-P233MMX Active	$3290	or $122/monthly

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Downgrade to 13.3" active from 14.1 active matrix 1024x768 display	$185
Extra Removable HDD case/external hard drive	$60/Call
PCMCIA Ethernet adapter 10 BT	$86
PCMCIA 33.6/56KX2 fax/modem	$105/187
External 16 Speed CD-ROM	$285
External Parallel 800 mb Tape Back-up	$285
1.4gb/2.1gb/3.1gb hard drive for notebooks	$294/$367/$496

NOTEBOOK & TOWER CLEARANCE CORNER

486dx4/75 DUALSCAN, 4mb 33.6fax/modem,8mb ram 520hd	$1395
P-100 DUALSCAN 5.0mb,33.6fax/modem, 16mb ram 1.3hd	$1695
P-133 DUALSCAN 8.2mb 33.6fax/modem 16mb 1.3gb 4xcd	$2095
P-133 ACTIVE, 8.2mb 33.6fax/modem 16mb 1.3gb 4xcd	$2395
P-166mmx, 32mb EDO 1gb hdd 1mb video 24Xcdrom,33.6fax/mdm $3495	
P-200mmx, 32mb EDO 1gb hdd 1mb video 24Xcdrom 33.6fax/mdm$3825	
P-233mmx 32mb EDO 1gb hdd 1mb video 24Xcd rom 33.6fax/mdm$3995	

ULTINET TOWER SPECIFICATIONS & OPTIONS"

Intel MMX Processor	P 166 to 233 MHz Pentium @ processor
	PII-233 to PII-300 MHz Pentium II @ processor
Motherboard HX/TX or LX	4 PCI 4 ISA slots or 4 PCI 2ISA, 1AGP
BIOS/ Chipset	PnP Intel Triton for MMX & PII
Cache	Fast 512k pipeline cache
High Performance	Yes, system optimized for max performance
Hard Drive & controller transfer mode	<11 ms, EIDE M4 or UDMA
HDD controller	PCI enhanced dual channel supports up to 4 devices
Floppy Drive	1.44 mb (incl) or LS-120mb (optional)
Low radiation/energy monitor	Monitor as required
Video Card	S2 Virge 2mb standard upgradeable to ATI and Matrox, etc
Sound Card, Speakers	Yamaha Wave32, SB16/SB64, speakers etc
Enhanced keyboard & mouse	Windows 95 104 enhanced & 400 dpi
Case, power supply	Enhanced deluxe tower 230 Watt
Serial/ Parallel Ports	2x16550 enhanced serial, enhanced parallel
COROM	24X etc
CDs Includes	57 CD title pak (educational & entertainment including Compteans &7Encyclopedia) or 7 CD title pak Mini Office suite
Warranty	2 years parts & 3yrs labour system warranty on all hardware, with fast turnaround

"Entry Level/Consumer Pkg warranty & specifications may vary slightly.

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P-166MMX Pentium @ processor	$775	
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PII-233MMX Pentium @ processor LX	$1353	
PII-266MMX Pentium @ processor LX	$1537	$57/mth
Add 1" 28dp monitor to the above		$210
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P-166MMX Pentium @ processor HX	$1326	
P-200MMX Pentium @ processor HX	$1456	
P-233MMX Pentium @ processor HX	$1587	$55/mth
PII-233MMX Pentium @ processor LX	$1922	$71/mth
PII-266MMX Pentium @ processor LX	$2102	$78/mth
PII-300MMX Pentium @ processor LX	$2430	$90/mth
Upg to 100watts premium speakers with surround sound/bass		$49
Upg Intel view 15" Professional 28dp mon for 17" 28dp		$251
Upg to S3 TV tuner with picture in picture (simul TV & work)		$89
Upg S3 2mb video card to S3 mb/ATI 3D exp 2mb/4mb		$30/$38/$53

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P-233MMX Pentium @ processor TX	$1957	$72/mth
PII-233MMX Pentium @ processor LX	$2382	$88/mth
PII-266MMX Pentium @ processor LX	$2472	$91/mth
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Upg to Genoc 56k or USRobotics 56k fax/modem		$10/$74
Upg to Matrox Mystique 2mb/ Matrox Mil millenium 4mb		$78/$172
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64 mb ram fast 10NS SDRAM 4.3 GB UDMA HDD 32mb/dcac xtec hdd Latest Intel Triton TX(the best) chipset motherboard, with 512k pipeline cache to boost system speed by upto 13-17% 24X CD ROM USRobotics 33.6 fax/data modem SB64 OEM sound card 104 enh keyboard, Matrox Millenium II 4mb video FS Mpeg 17" 28dp UVGA mon for multimedia speakers Log tech mouse 57 multimedia CD titles Compteans Encyclopedia & Full Windows 95 cd version (note price incl 17" monitor)

P-166MMX Pentium @ processor TX	$2239	$81/mth
P-200MMX Pentium @ processor TX	$2330	$84/mth
P-233MMX Pentium @ processor TX	$2481	$91/mth
PII-233MMX Pentium @ processor LX	$2790	$103/mth
PII-266MMX Pentium @ processor LX	$2890	$110/mth
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Adaptec 2940 / 2940 UW PCI SCSI controller with cables	$273 / $345
15" to Mag DX15T 15 28dp NI UVGA monitor Trinitron CRT	$384
15" to Sony 15SSII 28dp NI UVGA monitor	$390
15" to Intelview 17" 28dp NI OSD UVGA,1280x1024 82khz mtr	$481
17" to Optiquest 17" V773 28dp (1280x1024) mtr	$472
17" to Mag DX709T 17" 28dp NI UVGA monitor Trinitron CRT	$596
17" to Viewsonic V775 28dp N UVGA monitor Trinitron CRT	$568
17" to Optiquest V96 17" (1600X1280) 28dp TCO/OSD	$1018
15" to Sony 100ES 15" Sony ES200 17"	$282/$626
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Upg remote speakers to premium 100w with surround/bass	$46
Upg S3 Virge 2mb to 4mb/ATI 2mb Exp/ ATI All in Wonder	$30/$52/210
Windows 95 full CD version (note ed and configured with a reg pkg	$136
Epson400/860/Canon4300/HP670C/660C/HP6L$289/400/310/299/367/548	
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KMEGA 100mb zip drive (OEM)/LS-120 floppy drive	$169/$189
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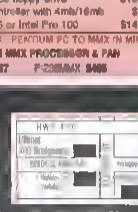

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TritonTX 3D Station

Intel Pentium Processor with Fan (support up to 233MHz MMX)
Triton 430TX PCI/ISA Main Board w/512KB Pipeline Cache
32MB-96ns EDO Performance Enhanced DRAM exp. to 128MB
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2.5GB UltraDMA-33 IDE Hard Drive
2x16550 Serial, 1x80-Directional Parallel
PCI ATI 3D Xpression+ w/4MB Accelerator w/2MB SGRAM
Creative Labs Sound Blaster AWE64 Card 60W Speakers(PMPO)
24x Speed EIDE CD-ROM
15" Non-Int. Low Rad. SVGA Monitor PnP
Mid-Tower Case with CSA Power Supply
104-keys Windows 95 Keyboard, 3 Button Mouse
2 Year Parts & Service Warranty

ULTRA DMA 33 33MB/s

Sound Blaster AWE64

MMX

intel inside pentium processor

150MHz	$1,265
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200MMX	$1,430
233MMX	$1,550

Pentium II ATX

Intel Pentium II Processor with Fan
ASUS 440LX AGP/PCI/ISA ATX Main Board
Internal L2 Cache
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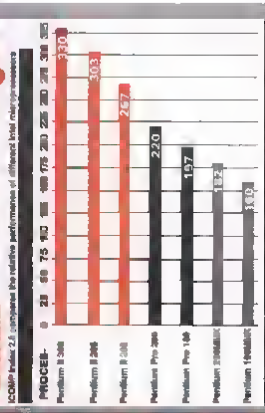

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Features:
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1.44MB Floppy Drive
2.1GB UltraDMA 33 IDE Hard Drive
Sec Ultra DMA Bus Master IDE Controller
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Clear TV Integrated TV Display Support
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14" Non-Int SVGA Monitor .28mm dp
15" Mid-Tower Case with 200W CSA Power Supply
104-keys Win95 Keyboard
3 Button MS Compatible Mouse
2 Year Parts & Service Warranty

32 bit MPEG PLAYBACK

PENTIUM

150MHz	$840	200MMX	$1,005
166MMX	$870	233MMX	$1,125

Triton II Power Station Plus

Features:
Intel Pentium/P54C(up to 233MHz MMX)
Triton 430TX PCI/ISA Main Board w/512KB Pipeline Cache
16MB-60ns EDO DRAM exp. to 128MB
1.44MB Floppy Drive
2.1GB UltraDMA 33 IDE Hard Drive
Sec Ultra DMA Bus Master IDE Controller
PCI Trident 9685 3D Accelerator w/1MB RAM (exp. to 2MB)
Clear TV Integrated TV Display Support
2x16550 UART Serial, 1 Bi Directional Parallel
14" Non-Int SVGA Monitor .28mm dp
15" Tower Case with 200W CSA Power Supply
104-keys Win95 Keyboard
3 Button MS Compatible Mouse
Creative Labs Sound Blaster 16 Card
24x Speed EIDE CD-ROM,60W Speakers (PMPO)
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SEGA Virtua Fighter Daytona USA Virtua Cop Games

PENTIUM

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MaxStation

Features:
Pentium PCI/ISA Main Board w/512KB Pipeline Cache
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1.44MB Floppy Drive
2.1GB Ultra DMA 33 IDE Hard Drive
Ultra DMA IDE Controller
PCI S3 Virge DX 3D Accelerator with 2MB EDO RAM (expandable to 4MB)
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14" Non-Int SVGA Monitor .28mm dp
Mini Tower Case with CSA Power Supply
104-keys Win95 Keyboard 3 Button Mouse
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6x86MX-166	$1,030
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ATI 3D Xpression + PCI 2MB/4MB	$357/114
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ATI Xpert@Work PCI Card 2MB/4MB/8M	$178/219/279
ATI Xpert@Play PCI Card 4MB/8MB SGRAM	$288/398
ATI Xpert@Work AGP Card 2MB/4MB	$137/248
ATI Xpert@Play AGP Card 4MB/8MB	$288/398
ATI TV Tuner Card	$115 00
Diamond Stealth 3D 2000 PCI 2MB/4MB EDORAM	$80/110
Diamond Monster 3D w/4MB EDO RAM (Retail Box)	$285 00
Matrox Millennium II PCI 4MB/8MB WRAM	$245/300
Matrox Mystique 220 3D Card 2MB/4MB SGRAM	$132/159
Matrox m3D 3D Card w/4MB	$135 00
Matrox Rainbow Runner Add-On Video Capture/Edit	$245 00
Cirrus Logic 5446 PCI w/1Mb exp. to 2MB (MPEG)	$28 00
S3 3D Virge DX PCI w/4MB EDORAM	$83 00
Trident 9685 3D Accelerators 1MB (w/3D Games)	$45 00

Monitors

ADI E440P 15" NI/LR(1280x1024 .28mmDP)	$385/415
ADI 9P/IP+ 17" NI/LR(1280x1024 .28/.26mmDP)	$675/710
Daytek 17" Diamondtron NI L/R(1600x1200 .25mmDP)	$708 00
Meg DJ530 15" NI(1280x1024 .28mmDP)	$430 00
Meg DJ21E 17" NI(1280x1024 .26mmDP)	$610 00
Meg DX700T 17" NI (1280x1024 .28mm Trinitron)	$800 00
Meg DJ800 19" NI(1600x1280 .26mmDP)	$1225.00
NEC A500/A700 .28mmDP DotPitch	$435/560
NEC E500/E700 .25mmDP Chromaclear	$540/955
NEC MS500/M700 .25mmDP Mesh Pitch	$645/1190
Panasonic S15/S70 15" 17" (1280x1024 .27mmDP)	$375/705
Proview 14" NI/LR(1024x768 .28mmDP)	$185.00
Proview 15" NI/LR(1280x1024 .28mmDP)	$285 00
Proview 17" NI/LR(1280x1024 .28mmDP)	$510 00
Sampo 15" NI/LR(1280x1024 .28mmDP) PnP	$300 00
Sony 1005X 19" NI L/R(1280x1024 .28mmDP)	$1000 00
Sony 1005F 15" NI/LR(1280x1024 .28mmDP)	$555 00
Sony CPD-200SX 17" NI(1280x1024 .28mmDP)	$835 00
Sony CPD-200SF 17" NI(1280x1024 .28mmDP)	$1075.00

HD/FD Controllers

ISA IDE HD/FD Controller with I/O UART (1Ser)	$62 00
Adaptec 1505 SCSI CD-ROM Controller	$75 00
Adaptec 2010 PCI SCSI Controller(no FDD)	$85 00
Adaptec 2920 PCI SCSI Controller	$145 00
Adaptec 2940U PCI Ultra SCSI Controller	$550 00
Adaptec 2940UW PCI Wide SCSI Controller	$395 00
Adaptec 3940UW PCI Multi-Channel SCSI Controller	$430 00

Keyboards & Cases

Fujitsu 4725 Enhanced 104 Keys	$57 00
Fujitsu 8725 Enhanced 104 Keys	$63 00
AirBoard Wireless Keyboard with Mouse Control	$80 00
BTC/Mitsumi Wireless 95 Keyboard	$110 00
Microsoft Natural Keyboard	$75 00
25" Server Tower with 200W CSA Power Supply	$230 00
Full Size Tower with 230W CSA Power Supply	$85 00
15/16" Mid Size Tower with CSA Power Supply	$48/58
Mini Size Tower with 200W CSA Power Supply	$50 00
Desktop with 200W CSA Power Supply	$54 00

Drives & Tape Backup

1.44MB 3.5" 1.44MB 3.5" Floppy Drive	$27 00
Mitsubishi LS-120 120MB Floppy Drive w/disk	$175 00
Ultra DMA 1.7GB/2.1GB/2.6GB HDD	$189/212/230
Ultra DMA 3.2GB/4.3GB/5.2GB HDD	$266/345/475
Ultra DMA 6.4GB/7.5GB/8.4GB HDD	$[illegible]
Iomega 100MB int/Parallel ZIP Drive	$135/190
Iomega 1GB Int/Ext JAZ Drive	$428/550
Syquest EZFlyer 230 Int IDE/SCSI Remov. HDD	$612 00
Syquest Sytet 1.5GB Int IDE/SCSI Remov. HDD	$289 00
Syquest Sytet 1.5GB Ext SCSI/Parallel Remov HDD	$339 00
HP Colorado T3000 TR-3 Int Backup Drive	$265 00
HP Colorado T3000 TR-3 Int/Ext Backup Drive w/Sftwr	$380/380
Seagate 3200MB TR-3 Int/Ext Tape Backup Drive	$380/280
Seagate 8GB TR-4 Int IDE/SCSI Tape Backup Drive	$595 00
Seagate 8GB TR-4 Ext SCSI Tape Backup Drive	$640 00

Motherboards

Intel Pentium 166/200MHz 66MHz CPU w/512KB Cache	$640/415
ASUS TX97 430TX Pentium Board w/512KB Cache	$188 00
ASUS P55T2P 440LX Pentium II Board (AGP)	$582 00
Tyan Dual Pentium PCI/ISA Board	$ C 01
Cyrix MediaGX Main Board (Built-in Sound & Video)	$240 00

MultiMedia

Acer 16bit Sound Card 3D	$63 50
Creative Labs 24X Discovery AWE64	$328 00
Creative Labs PC-DVD Encore DVD Kit (3 DVD Titles)	$480 00
Creative Labs Sound Blaster 16 PnP	$58 00
Creative Labs Sound Blaster AWE64/AWE64 Gold	$178/258
Creative Labs WebCAM Camera	$138 00
Diamond Monster Sound 3D Sound Card 32 Voice	$105 00
24X/36X IDE CD-ROM Drive	$139/155
Panasonic 4x/2x Int. CD-R Drive w/SCSI cont.	$435 00
Pioneer 12X/24X SCSI CD-ROM Drive	$135/180
Yamaha CRW4001T int 4x6 DE Rewrt RCDR	$725 50

Modem & Mice

33.6 SVR Int. Fax Modem w/Voice	$58 00
Motorola 56K Int/Ext Fax Modem	$115/179
Motorola VoiceSurf 56K Int/Ext Modem	$125/205
US Robotics Sportster ISDN 128K Int.	$276 00
US Robotics 33.6 Int/Ext Fax Modem	$112/155
US Robotics 33.6K Int w/Voice(Full Duplex)	$134 00
US Robotics 33.6K Ext Modem(Full Duplex)	$220 00
US Robotics 56K Int/Ext Fax Modem	$189/275
US Robotics 56K Int/Ext Fax Modem Voice	$188/355
US Robotics Big Picture Video Kit	$300 00
Elastic Mouse with Magic-Button	$13 00
Logitech Mousetrak OEM	$57 00
Logitech Mouseman+	$79 00
Microsoft Mouse v.2 OEM	$65 00
Microsoft Comp Mouse	$7 50

Printers

Canon BJ-230 Color Inkjet	$197.00
Canon BJC-4300 Color Inkjet	$275 00
Brother HL730/760DX Laser Printer 600dpi	$480/565
Brother HL 5MB Laser Printer 1600dpi Class	$1350 00
Epson Stylus 400 Color Inkjet 720dpi	$200 00
Epson Stylus 600/800 Color Inkjet 1440dpi	$375/500
HP 600/720C Deskjet Color Printer	$350/495
HP 870/890Cs Deskjet Color Printer	$600/555
HP 1000C3G Deskjet Color Printer	$800 00
HP 5000 Laserjet,1200 dpi 17PPM	$1000 00
HP 5/5N Laserjet 600 dpi 12 PPM	$1450/1855
HP 6L Laserjet, 600 dpi 6 PPM	$550 00
HP 6P/6MP Laserjet, 600 dpi 6 PPM	$1300/1300
Raven PR-2405 24-pin, 192 cps	$230 00

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The MicroConcept Systems Home Page.
http://www.microconcept.com

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32MB 60ns 72-Pin EDO SIMM	$90.00
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AmJet

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NetWare v3.12 100/250 User	$1700/3410
NetWare v3.12 Manuals Only	$600

NetWare v.4.1*

NetWare v4.1 5/10 User	$700/1000
NetWare v4.1 25/50 User	$2000/2610
NetWare v4.1 100/250 User	$4170/Call
Netware v4.1 500/1000 User	Call/Call
NetWare v4.1 Manuals Only	$210

*Use sale full-version

Tape / CD ROM Drive

Exabyte Eagle TR-3 Int. Backup Drive w/Int	$ 2 9 0
Exabyte Eagle TR-4 Int. Backup Drive w/Net	$ 5 0 0
Exabyte 8700LT 5-10GB Ext 8mm Drive	$ 0 0 0
Exabyte 8500EL 20-40GB Int/Ext 8mm Drive	$943/5750
Exabyte Eliant 820 14GB Int/Ext Tape Drive	$987/2040
Iomega Ditto 2GB Int/Ext Tape Drive	$169/230
Iomega Ditto 3200 3.2GB Int/Ext	$243/312
Hewlett Packard Surestore 5/BE Int/Ext 8GB DAT	$1400/1595
Hewlett Packard Surestore 24/BE Int/Ext DAT	$170/[illegible]
Seagate 3GB 4mm DAT Int/Ext SCSI Drive	$035/[illegible]
Seagate 4GB 4mm DAT Int/Ext SCSI Drive	$800 1045
Seagate 8GB 4mm DAT Int/Ext SCSI Drive	$1000/1250
Seagate 24GB 4mm DAT Int/Ext SCSI Drive	$1480/1800
Sony SDT-5000 Int/Ext. 4-8GB DAT	$1285/1800
Sony SDT-5800 Int/Ext 4GB DAT	$980/1280
Sony SDT-7000 Int/Ext. 4-8GB DAT	$1260/1520
Sony SDT-9000 Int/Ext 24GB DAT	$1779/1850

Ethernet Coax / Combo Adapters

3COM 3C5008 Ethernet BNC	$135
3COM 3C5009 Combo BNC/RJ45	$145
3COM 3C509 PCI Ethernet III Combo	$165
CNet CN8010E ISA & 10BaseT Ethernet	$ 3 5
CNet CN9200E PCI Ethernet Combo	$ 4 5
D-Link DE-220PCT ISA Ethernet Combo	$ 4 0
D-Link DE-220PCT PCI Ethernet Combo w/Jumpless	$ 4 0
GVC 2000BT PCI Coaxial/10BaseT Jumpless	$ 0 0
Intel ISA EtherExpress Pro 10+ Combo	$ 3 4
Intel ISA EtherExpress Pro 10+/Flash Combo	$ 3 5
Intel PCI EtherExpress Pro 10+ Combo	$ 1 5 4
SMC PCI EzCard Combo	$ 0 5
SMC 8416BT ISA EtherEZ Coax	$ 1 2 8
SMC 8416BT SA EtherEZ Combo	$ 1 2 0
SMC 8432BT PC EtherPower Combo	$ 1 1 3

Power Protection

APC BackUPS 200
$145.00

American Power 120 Volt

BackUPS 200/200	$128/140
BackUPS 400/600	$200/850
BackUPS 600/900/1200	$340/800/830
Backup Pro 280/420/650	$280/340/410
BackupPro 1000/1400	$645/700
SmartUPS 450/700/1000	$800/865/850
SmartUPS 1400/2000/3000	$900/1100/2320
Back UPS Opto 250-3 Surge 6 3 UPS Outlets	$ 7 0 0
Matrix 3000VA/5000VA (Modular UPS)	$5738/5400
SmartCELL for Matrix	$ 7 0 3
Line Conditioner LR600/LR1800	$170/245
Personal SurgeArrest 7/7 Combo with Tel	$ 0 0 / 3 0
Professional SurgeArrest 7/7 Combo with Tel	$ 0 0 / 4 0
Network SurgeArrest 7/7 Combo with Tel	$ 4 2 / 5 0
Network SurgeArrest 8 Combo	$ 4 0

Print Servers

Emulex NetQue 10BaseT/2 Print Server	$410
Emulex NetJet NT™ Print Server 10BaseT/2	$370
HP JetDirect J3155B RJ45	$430
HP JetDirect J3582B RJ45/BNC/Local Hub	$610
HP JetDirect J3583B Token Ring DB-9 RJ45	$738
HP JetDirect 1865 RJ45	$230
HP JetDirect EX Plus3 J2580A RJ45/PCI	$860
HP JetDirect EX Plus3 J2584A Token Ring DB-9 RJ45	$730
HP JetDirect J2586A 10/100VG Print Server	$770
Intel NetportExpress Pro Ent. Printer Server	$625
Intel NetportExpress Pro Ent Printer Server	$380
Intel NetportExpress Pro/100 Ent. Bundle Server	$370

PCMCIA Adapters

3COM 3C589D Ethernet III TPO	$160
3COM 3C589B Ethernet III Combo	$112
3COM 3C589D-TP Ethernet III TPO + 28.8Kbps Modem	$800
D-Link DE-660CT PCMCIA Combo NE2000 Compatible	$190
D-Link DME-336T Ethernet/Modem	$300
SMC 8020BT EtherEZ PC Card (RJ45)	$173
SMC 8020BT EtherEZ PC Card Combo	$232
Xircom PCMCIA 33 Mbps Modem	$204
Xircom PCMC A 56Kbps Modem	$310
Xircom PCMC A RJ45 Ethernet + 28.8Kbps Modem	$875
Xircom PCMCIA Combo Ethernet + 28.8Kbps Modem	$425
Xircom PCMCIA Ethernet + 33 Mbps Modem (Mini-Dock)	$865
Xircom PCMCIA 10/100 Ethernet + 56K Modem	$400
Xircom PCMCIA 10/100 Ethernet Ready	$190
Xircom CardBus 10/100 Ethernet Card	$216

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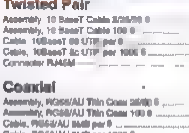
Windows NT Server v4.0 CD w/5 Clients Lic. $1080
Windows NT Server v4.0 CD w/10 Clients Lic. $1470
Windows NT v4.0 Client Access Lic. $ 4 0
Windows NT Server v4.0 upgrade w/5 Clients Lic. $510
Windows NT Server v4.0 upgrade w/10 Clients Lic. $805
Windows NT Workstation 4.0 CD $300
Windows NT Workstation 4.0 upgrade $100
BackOffice v2.0 Server CD $2030
BackOffice v2.0 Server CD $3190
Microsoft SMS version 1.2 w/10 Clients Lic $1400
Microsoft SMS version 1.2 w/25 Clients Lic. $1800
Microsoft SNA Server v3.0 w/5 Clients Lic. $1725

Network Printers

HP 4000N LaserJet,600dpi,17ppm,8MB	$1800
HP 4000TN LaserJet 1200 dpi 17ppm,8MB	$2675
HP 5Si LaserJet,600dpi,24ppm,4MB	$3610
HP 5Si NX Network Ready,600dpi,24ppm	$3875
HP 5Si MX LaserJet,600dpi,24ppm	$5200
HP 4V/4MV LaserJet,600dpi,18ppm	$2600/3790
Lexmark Optra S 1250,12ppm,4MB	$1000
Lexmark Optra S 1255,12ppm,4MB,Ethernet	$1600
Lexmark Optra S 1650 16ppm,4MB	$1400
Lexmark Optra S1855,16ppm,4MB,Ethernet	$1800
Lexmark Optra S 1855, 16ppm,4MB	$1800
Lexmark Optra S 1255 12ppm 16ppm,4MB,Ethernet	$2100
Lexmark Optra S 8455,24ppm,4MB	$3450
Lexmark Optra S 2400N,22ppm,4MB,Ethernet	$2300
Lexmark Optra SC 1275 3ppm 16MB	$5710
Lexmark Optra SC 1275N 3ppm 32MB	$6300

Cables & Jacks



Twisted Pair

Assembly, 10 BaseT Cable 3/28/30 ft	$10/18/28
Assembly, 10 BaseT Cable 100 ft	$ 4 5
Cable, 10BaseT 8S UTP per ft	$0.35
Cable, 10BaseT 8C UTP per 1000 ft	$225
Connector RJ45M	$1 06

Coaxial

Assembly, RG58/AU Thin Coax 3/6/50 ft	$1/3/22
Assembly, RG58/AU Thin Coax 100 ft	$ 0 5
Cable, RG58/AU 95ft per ft	$0.20
Cable, RG58/AU 95ft per 1000 ft	$160
Connector 3MC "T"	$0.60
Terminator 3MC 50 ohm	$0.60
Tool,BNC Crimping	$ 6 0
Terminator 3MC 52 ohm w/ground strap	$ 1 0

10 BaseT Hubs

3COM 3C16640 SuperStack I Entry Hub 12 Port	$372
3COM 3C16641 SuperStack II Entry Hub 24 Port	$575
3COM 3C16846 SuperStack II PSH Hub 48 12 Port	$1030
3COM 3C16848 SuperStack II PSH Hub 48 24 Port	$1170
3COM 3C16870A SuperStack II Hub 10 12 Port	$700
3COM 3C16871A SuperStack II Hub 10 24 Port	$1035
3COM 3C16875B SuperStack II Hub 10 48 Port	$2860
3COM 3C16880 SuperStack I Dual Speed Hub 12 Port	$1626
3COM 3C16881 SuperStack II Dual Speed Hub 24 Port	$2586
3COM 3C16930 OfficeConnect 8/TPO	$116
3COM 3C16931 OfficeConnect 8/TPC	$172
3COM 3C16710 OfficeConnect 8/TPM	$660
CNet CN4000TPC 8 Port Hub	$ 1 0
CNet CN4000 16TPC 16 Port Hub, Small Footprint	$220
D-Link DE-805 TPO/C 5 Port Hub	$ 6 0
D-Link DE-805TC 8 Port Hub	$125
D-Link DE-812TC 12 Port Hub	$220
D-Link DE-816TP 16 Port Hub	$240
D-Link DE-824TP 24 Port Hub	$320
Hewlett Packard AdvancedStack Hub 8 Port	$109
Hewlett Packard AdvancedStack 10BT 24T w/Manage	$1359
Hewlett Packard AdvancedStack 10BT Switching Hub-12R	$ 4 1 8
Hewlett Packard AdvancedStack 10BT Switching Hub-24R	$1171
Hewlett Packard AdvancedStack 10BT Switching Hub-24T	$1229
Netgear EN104TP 4 Port Hub	$ 7 4
Netgear EN108TP 8 Port Hub	$ 9 4
SMC 3696T-EZ 8 Port Hub	$ 0 3
SMC 3608TAG-EZ 8 Port Hub	$128
SMC 3616TG-EZ 16 Port Hub	$200
SMC 3624TT Tigerhub 24 Port Hub	$ 3 5
SMC 3616MC Tigerhub 8 Port Hub 3MC	$ 8 5
SMC 3224FC Tigerhub 8 Port Fiber	$185
SMC 3612TA TigerStack 12 Port Hub	$ 8 2
SMC 3624TA TigerStack 24 Port Hub	$110
SMC 3608T TigerStack 28 Port Hub	$110

10 BaseT Adapters

3COM 3C900 TPO	$ 7
3COM 3C900 TPO PCI	$ 0
D-Link DE-220BT ISA Ethernet 10BaseT	$ 0
D-Link DE-530BT PCI Ethernet 10BaseT	$ 0
Intel ISA EtherExpress Pro 10+ 10BaseT	$ 7
Intel ISA EtherExpress Pro 10+/Flash 10BaseT	$ 6
Intel PCI EtherExpress Pro 10+ 10BaseT	$ 1
Kingston EtherEx PCI 10BaseT	$ 5
SMC PCI EzCard 10BaseT	$ 4
SMC 8416BT SA EtherEZ 10BaseT	$ 0
SMC 8432BT PC EtherPower 10BaseT	$ 0

Switches

3COM 3C16860A SuperStack II 12TP/1 TX	$232
3COM 3C16869A SuperStack II 24TP/1 TX	$335
BayStack 301 22 10BT/2 100B-TX	$370
BayStack 308T 8 10BT/1 100B-TX	$240
D-Link DES-2205 8 Port 10/100	$102
Adaptec SWS10NA 10/100 Switch 10 10BT/2 100B-TX	$ 0 0
Adaptec SWS18NA 10/100 Switch 18 10BT/2 100B-TX	$740
SMC TigerSwitch 5 10BT/1 TX	$215

100 Mbps Systems

3C905 TX PCI
Fast Ethernet Adapter
$88.00

3COM 3C905-TX FastEthernet PCI	$ 0 0
3COM 3C597 TX FastEthernet EISA	$ 0 2 5
3COM 3C16729 FastEthernet 8 Port Hub	$ 6 0 5
3COM 3C16946-TXI SuperStack II 100 12 Port Hub	$1030
3COM 3C16947A SuperStack II 100 12 Port Hub	$1845
D-Link DFE-500TX PCI FastEthernet	$ 6 0
D-Link DFE-530TX FastEthernet 8 Port Hub	$ 0 0
Intel Pro 100 PCI FastEthernet	$ 0 0
Intel Pro 100 PCI Server Adapter	$ 0 5
Intel Pro 100 Small FastEthernet	$ 0 0
Intel Express 10/100 8 Port Hub	$ 6 4
Intel EE110TX 12 10/100 Stackable 12 Port Hub	$1000
Intel EC100TX Express 100Base-TX 16 Port Hub	$2130
HP DeskDirect 100VG PCI Adapter	$ 1 7 0
HP DeskDirect 10/100TX PCI FastEthernet Card	$ 1 1 0
Netgear FA310TX 10/100 PCI FastEthernet	$ 7 5
Adaptec FE108NA 10/100 4 Port Hub	$ 2 0 7
Netgear FE108NA 10/100 4 Port Hub	$ 8 1 3
SMC Ethenpower 10/100Base-T PCI	$ 7 5
SMC Ethenpower 10/100 PCI Dual Channel	$ 0 5 5
SMC 5208tx TigerHub 10/100 8 Port Hub	$ 5 0 5

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ML184	300	9	$355
ML320/321	435	9	$490/574
ML520/521	435	9	$583/783
ML390/391	390	24	$506/676
ML395/Color	607	24	$1514/1623
ML590/591	360	24	$680/970

brother

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True 600 DPI, 6 Pages Per Minute, for Windows and DOS with Brother Font Manager Software

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2.3GB	ST32272N	8ms	512K	7200	ULTRA SCSI	$ 505
2.3GB	ST32272W	8ms	512K	7200	ULTRA WIDE	$ 545
4.3GB	ST34572N	9ms	512K	7200	ULTRA SCSI	$ 790
4.3GB	ST34572W	8ms	512K	7200	ULTRA WIDE	$ 840
4.5GB	ST34501N	7.5ms	512K	10000	ULTRA SCSI	$ 885
4.5GB	ST34501W	7.5ms	512K	10000	ULTRA WIDE	$ 935
9GB	ST19171N	8ms	512K	7200	ULTRA SCSI	$1310
9GB	ST19171W	8ms	512K	7200	ULTRA WIDE	$1350
9GB	ST19101N	7.5ms	512K	10000	ULTRA SCSI	$1475
9GB	ST19101W	7.5ms	512K	10000	ULTRA WIDE	$1515
18GB	ST423451N	13ms	2MB	5400	ULTRA SCSI	$2495
18GB	ST423451W	13ms	2MB	5400	ULTRA WIDE	$2530
1GB	WD2170-0003	8ms	512K	7200	ULTRA SCSI	$ 535
2GB	WD2170-0007	8ms	512K	7200	ULTRA WIDE	$ 555
4GB	WD4360-0003	8ms	512K	7200	ULTRA SCSI	$ 780
4GB	WD4360-0007	8ms	512K	7200	ULTRA WIDE	$ 810
8.1GB	WD8100-0003	8ms	512K	7200	ULTRA SCSI	$1275
8.1GB	WD8100-0007	8ms	512K	7200	ULTRA WIDE	$1305
2.1GB	OM32160ST	10ms	128K	5400	ULTRA SCSI-3	$ 330
3.2GB	OM33240ST	10ms	128K	5400	ULTRA SCSI-3	$ 390
4.3GB	OM34320ST	10ms	128K	5400	ULTRA SCSI-3	$ 465
6.4GB	OM36480ST	10ms	128K	5400	ULTRA SCSI-3	$ 570

Seagate

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Logitech WingMan Warrior Joystick, the double-flatted, 360-degree precision combat machine.

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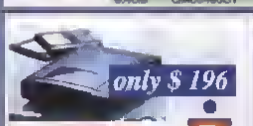

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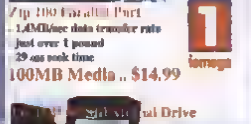

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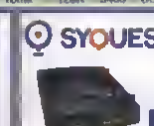

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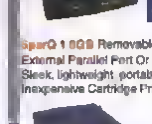

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380ED	166mmx	16MB	2.1GB	20X	12.1 DSTN	$3,285
380ED	166mmx	16MB	3.0GB	20X	12.1 TFT	$4,680
380ED	166mmx	16MB	5.1GB	20X	12.1 TFT	$5,180
560E	166mmx	16MB	2.1GB		12.1 TFT	$4,290
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760XL	166mmx	16MB	2.1GB		12.1 TFT	$4,720
760XD	166mmx	32MB	3.0GB	8X	12.1 TFT	$5,750
765L	166mmx	32MB	3.0GB		13.3 TFT	$5,070
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770	200mmx	32MB	3.2GB		13.3 TFT	$6,600
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440CDX	P133	16MB	1.3GB	12.1 DSTN	$2,690
440CDT	P133	16MB	1.3GB	12.1 TFT	$3,590
440CDX	P166	32MB	2.1GB	12.1 DSTN	$3,560
440CDT	P166	32MB	2.1GB	12.1 TFT	$4,390
460CDT	P233	32MB	3.6GB	12.1 TFT	$5,690
520CDT	P166	32MB	2.1GB	13.3 TFT	$5,270
530CDT	P166	32MB	2.1GB	12.1 TFT	$5,620
300CT	P133	32MB	1.3GB	10.4 TFT	$4,270
750DVD	P233	32MB	5.1GB	13.3 TFT	$3,260
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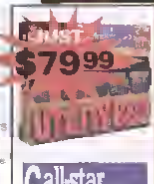

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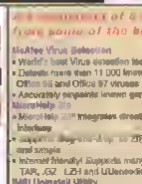

Product Comparison Chart

Features	PowerQuest DriveCopy	PowerQuest Drive Image	PowerQuest Drive Image Pro
Copy the active contents of one drive to another drive within the same computer	X	X	X
Copy individual partitions or entire drives		X	X
Create and restore hard drive image files		X	X
Create and store hard drive image files for backup, upgrades and system recovery		X	X
Change partition size and move files copy up to two times		X	X
PartitionMagic's resize volume and move technology for use on the source or destination drive			X
Create and store image files to set up multiple workstations over a network			X
Drive Image File Editor			X
Multiple workstation or site license available			X
Command line scripting			X
Your Cost	$38	$89	$979

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	OPTIQUEST Q53	0.28mm	1280x1024	13.8"	30-70KHz	$ 345
	OPTIQUEST V656	0.28mm	1280x1024	13.6"	30-70KHz	$ 390
	ViewSonic E655	0.28mm	1280x1024	13.6"	30-70KHz	$ 400
	ViewSonic 15GS	0.27mm	1280x1024	14.0"	30-69KHz	$ 440
	ViewSonic 15GA	0.27mm	1280x1024	14.0"	30-69KHz	$ 525
17"	OPTIQUEST Q71	0.28mm	1280x1024	16.0"	30-70KHz	$ 635
	OPTIQUEST V773	0.26mm	1280x1024	15.8"	30-69KHz	$ 699
	OPTIQUEST V775	0.28mm	1600x1280	16.0"	30-85KHz	$ 800
	ViewSonic G771	0.27mm	1280x1024	16.0"	30-70KHz	$ 755
	ViewSonic 17GA	0.27mm	1280x1024	16.0"	30-69KHz	$ 830
	ViewSonic GT770	0.25mm	1280x1024	15.9"	31-64KHz	$ 910
	ViewSonic GT775	0.25mm	1600x1280	16.0"	30-80KHz	$ 930
	ViewSonic 17PS	0.26mm	1600x1280	16.0"	30-86KHz	$ 940
	ViewSonic P775	0.25mm	1600x1280	16.0"	30-95KHz	$ 920
	ViewSonic PT775	0.25mm	1600x1280	16.0"	30-95KHz	$1 030
19"	OPTIQUEST V96	0.26mm	1600x1280	18.0"	30-80KHz	$1 195
21"	ViewSonic G810	0.25mm	1800x1280	20.0"	30-85KHz	$1 795
	ViewSonic P810	0.25mm	1800x1280	20.0"	30-95KHz	$1 680
	ViewSonic P815	0.25mm	1800x1440	20.0"	30-115KHz	$2,100

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COMDEX

Geeks storm Las Vegas

BY GRAEME BENNETT

There's nothing quite like Comdex (now officially known as ZD Comdex), the largest trade show in North America, to further enliven the already lively streets of Las Vegas.

Comdex is as big and gaudy as the towering marquees throughout the city that make the many landmarks appear much closer than one's tired feet later discover.

Indeed, if you attended every Comdex vendor's booth at the many venues throughout the city during the week of the show, you'd have only about 30 seconds to spend at each booth. Taxi lineups consist of hundreds of people around the Hilton Sands, and Las Vegas Convention Center that constitute the show's main venues. Restaurants can have one-and-a-half-hour waits. As one of our employees noted, Microsoft's booth in Las Vegas is almost as big as the entire Comdex show in Toronto. (Okay, we're exaggerating on that last point.) Nevertheless, when you see the vast amounts of money being made in the computer industry, it is clearly the ultimate revenge of the nerds.

As over 200,000 Comdex attendees swarm the streets of Sin City, the cabbies and casino workers are regularly heard to complain that computer geeks don't gamble or tip heavily enough—presumably a ploy to increase tipping. Mind you, the Comdex showgoers consumption of alcoholic beverages is apparently not on the list of activities found lacking. With all the free parties and schmoozes scattered throughout the city after hours, free food and drink are part of the action that turns the city frenetic and occasionally bizarre. At last year's Comdex, for example, Microsoft hosted an event it calls Geekfest in a tacky Vegas chapel with an Elvis emcee and a challenge to provide a complimentary marriage ceremony (and quickie divorce) to any man and woman who would dare to get married at the event. Unfortunately, we had to pass on this year's Geekfest event, which packed 'em in with its promise of "cold pizza and warm beer." Other after-hours parties this year included free performances by noted acts such as Chaka Khan, B.B. King, master magician Lance Burton and, yes, the one-and-only Village People. Whoo-hoo!

Canada's Steve Dotto, the popular host of the *Dotto's Data Café* television show seen nationally on educational networks, may have had the toughest job in Las Vegas on the second night of the show, as he emceed for B.B. King. While waiting for B.B. and his band to take the stage, Dotto cajoled the now than 2,500 attendees with jokes running the gamut from the reason why Las Vegas is the perfect town to host a show about computers ("both were built from chips and silicon"), to references to certain unpleasant side effects of attending the Micrografx Chili Cookoff, but it was a tough crowd. Heckles began chanting "B.B., B.B., B.B." until, mercifully, the 72-year-old master bluesman took the stage and wowed the standing-room-only crowd with an energetic performance. (The show was also "cybercast" across the Internet in RealVideo digital video and audio format at http://www.livecomserts.com.)

Fortunately, Dotto reclaimed the crowd's favor after the show during a giveaway of two autographed replicas of King's Gibson guitar, Lucille. When a name was drawn belonging to an incredibly unlucky person who had left early, Dotto ceremoniously tore up the "must

Continued on page 24

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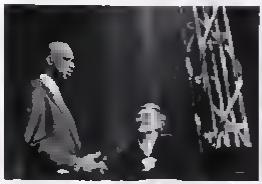
COMDEX

Geeks storm Las Vegas

Continued from page 22

be in attendance to win" ticket, to enormous audience approval. All in all, the event, co-sponsored by Canada's MGI, AST, Iomega, RealNetworks, and Gibson guitars was one of the highlights of the show for this reviewer.

This year's show was unique in that it was the first time a keynote speech was held on the Sunday night before the show. The keynote, featuring Mr Megabucks himself, Bill Gates, was both entertaining and informative as Gates poked fun at himself ("I'm the only one who can get an NT error message when I try and flip on the light switch, so it gives me a lot of motivation to make things simpler," he quipped) and made several humorous jabs at the U.S. Department of Justice in his "top 10 list of reasons he loves his PC." In his David Letterman-style list, Gates noted the irony of using his Windows PC and an integrated Web browser to send a 48-page brief to the DOJ, addressing the very issue of whether such integration should be allowed.



Kareem Abdul Jabbar and Bill Gates

Later on, Gates brought out U.S. Marine Maj. Jim Cummisky, who entertained the crowd by tossing his ruggedized portable (an off-the-shelf Panasonic CF-51 with a plastic keyboard overlay) to the ground and stomping on it. Then Gates, in best dog-and-pony-show fashion, trotted out none other than Kareem Abdul Jabbar (at more than 7 ft. tall, Jabar required a foot high mouse pad to use the computer on the onstage desk) to show off the basketball great's personal Web pages. Intentionally or not, Kareem, who described himself as a computer novice, proved to be remarkably inept at clicking the links on his Web page. Thus, the demo ended up being a good example of how, as Gates conceded at its conclusion, Microsoft still has some work to do to make computers easier to use.

Gates also showed a hilarious video featuring Microsoft vice-president Steve Ballmer appearing as a sleazy home shopping channel TV pitchman hawking copies of Microsoft Bob for $1.99 ("Act now and you'll also receive 30 more copies of Bob absolutely free!")

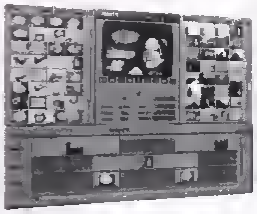
The keynote address the next morning by Compaq chief executive officer, Eckhard Pfeiffer also featured a very funny video for a product many of us wish really existed. The Compaq BuzzPro, touted as an automatic buzzword translator, could, by simply holding it up to the telephone, take a technical support person's statement like, "your CRT display is malfunctioning because you need to attach the 15-pin D-sub VGA connector to the port on the card found on the back of your

computer's CPU chassis" and translate it into "you need to connect your monitor." If only!

Elsewhere, Borland, which has fallen on some hard times during the last few years, showed that it is still in fighting form with a *Star Wars* parody called Software Wars that pitted the intrepid crew of the tiny Borland ship against the might Deathstar of you-know-who. Borland's chief executive officer was decked out as Obi Wan Kenobi and the company's vice-presidents and executives were camping it up as Han Solo, Luke Sywalker, C3PO and the other figures from the famous Lucasfilms trilogy. And in a climactic scene during the showdown with Darth Vader, a well aimed light-saber thrusts off his head, which reveals a Bill Gates lookalike behind the Vader mask.

Of course, all the glitzy demos and over-hyped presentations are there to draw attention to the real stars of Comdex: the many products and services that companies spend hundreds of thousands—sometimes even millions—of dollars to trot out at the show. Indeed, the cost to put on a lavish spread can be so great that some companies, such as Netscape and Apple, didn't have a presence on the showfloor at all. (Netscape's Jim Barksdale did, however, appear in one of the panel discussions during the show.)

So what did I like best on the showfloor itself? The product I'd name as most likely to change the world of broadcast television is finally shipping from Play Inc. Trinity is a US$4,995 box that does digital video effects



Play Inc's Trinity digital video effects box

that have been, until now, pretty much impossible, or at least the exclusive domain of much, much more expensive systems. If you know what a revolution the original Video Toaster was, be prepared to be delighted again. Trinity takes video production to a broadcast-quality level with effects and capabilities that are simply stunning.

A stellar example of why you should never

Continued on page 27

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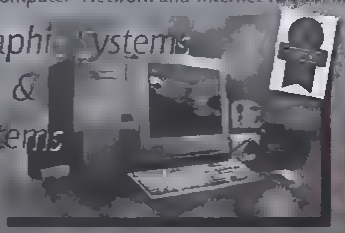

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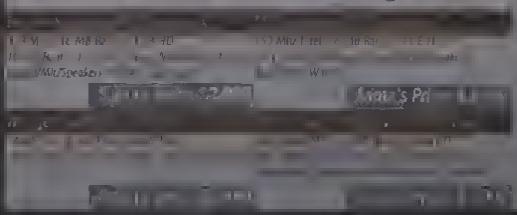

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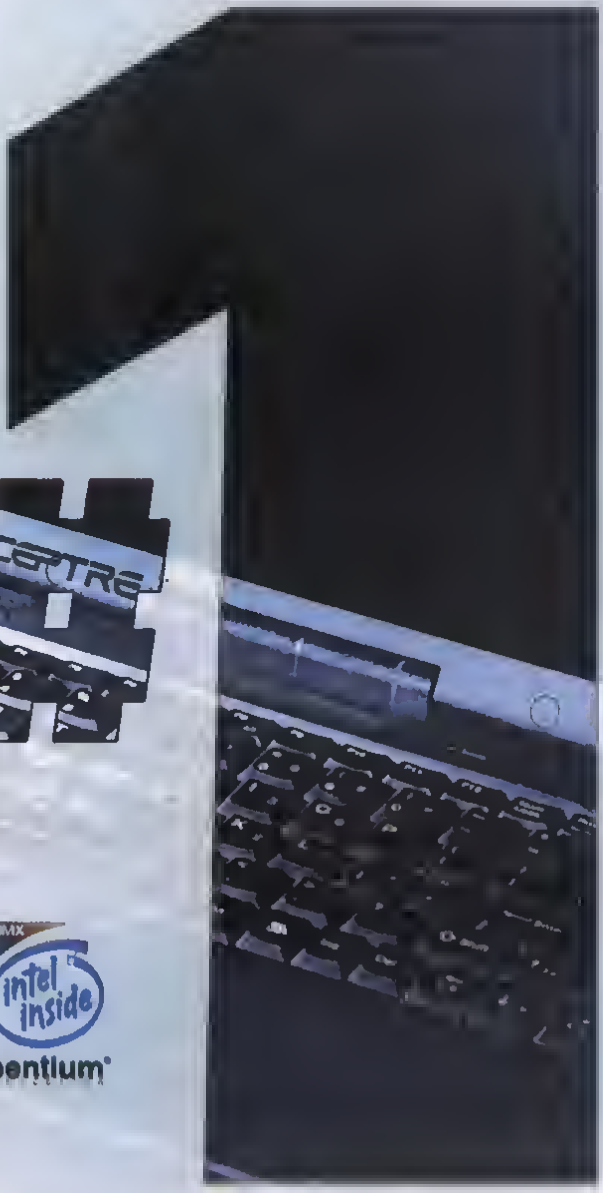

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"Sceptre takes top honors with the Sceptre Soundx 5500, which leaves all the other notebooks in its tracks when running NSTL's gauntlet of performance benchmarks. This is a very fast desktop replacement with a 233-MHz Pentium® processor, a 13.3-inch XGA display, and a roomy 3GB hard disk drive for storing large multimedia files."

NSTL PC Digest, September 1997

Best Buy - *PC Portables*

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PC Portables, November 1997

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Geeks storm Las Vegas

Continued from page 24

buy version 1.0 of anything was Microsoft's Windows CE 2.0, which adds networking, spelling checking, and color display support to Microsoft's version of Windows designed for handheld PCs and other consumer electronics (CE) devices. A demo of CE 2.0 and some hands-on time in several booths of vendors like Hewlett Packard, LG Electronics, Sharp, Casio or NEC already shipping CE 2.0 devices convinced us that the market for these inexpensive miniature PCs could grow significantly as sales forces and other mobile users grow to appreciate the long battery life (our Casio Cassiopeia gets about 25 hours from a charge) and compatibility with documents from "desktop versions" of Word, Excel and, in this version, PowerPoint. Also new is CE 2.0's ability to synchronize many mobile users to the data from one desktop PC or vice versa. And addressing 1.0's most glaring oversight, 2.0 can print, too. For the record, we liked the NEC unit's keyboard the best, while the Sharp unit boasted the best color display.

The coolest technology you'll probably never own was from a company called Real3D, a division of defence giant Lockheed Martin. The company teamed up with MetaCreations (also at the show with its many graphics software titles) to produce RealScan 3D, a system that includes an amazing camera that can capture, in a half second, a 3D model (with automatically placed full-color texture maps) of almost any subject. In the demo we saw, the operator of the system assured a volunteer from the audience that the laser was indeed safe and proceeded to create a VRML "mask" of the subject in seconds. You literally couldn't tell which one was the original photo and which one was the 3D model—cool! At US$27,900, the company says it expects this product to be a hit with game developers, museums and those involved with manufacturing and medical imaging applications. We can imagine a few other uses, in a town like Las Vegas, too.

Of course, the long history of Comdex is rife with examples of cool technologies that never make it in the marketplace. An important aspect of Comdex for many companies is the floating of such trial balloons to see what flies and what doesn't. (Indeed, the airspace above Comdex is well-stocked with many real balloons, too. We saw dirigibles and airship examples of big budgets from Corel, Sanyo, Fuji, Viewsonic, and numerous others. And where else can you find an Energizer Bunny the size of an apartment building?)

In an upcoming article (also available on our Web site at http://www.tcp.ca), I'll detail the pros and cons of the many competing varieties of recordable DVD drives as yet another example of why you should never buy version 1.0 of anything. Until then, here's to comfortable footwear! ❑

What's new at Fall Comdex

Continued from page 14

video capture product, now compatible with Windows NT. An added productivity pack for the DC30 and DC30 plus offers external device control, and the miroINSTANT Video, and Adobe Premier plug-in to allow users to save effects and transitions as separate digital video clips. The main advantage of this plug-in is that it helps reduce rendering time and file size by allowing transitions to be created separately from long sequences of regular video.

The VideoDirector Studio 200 is billed as the "world's easiest video editor," a simple hardware/software product that allows a PC user to control home video equipment to edit videotapes. The VideoDirector Studio 200's price has been reduced from US$299 to US$199.

Contact: Pinnacle
Web site: http://www.pinnaclesys.com

Cyrix demonstrates universal MediaCentre concept

Cyrix, one of the chief contenders against the Intel computer processor behemoth, showed new technologies at Comdex that were designed to demonstrate that company's technical prowess and gain it respect as a viable contender against Intel. Cyrix presented a technology demonstration in the form of the Cyrix MediaCentre, a slim line box designed to be the key to seamlessly tying together computer and consumer electronics technologies. Based on the Cyrix MediaGX processor, the MediaCentre is designed to interface with multiple display formats, playback media and other peripherals. ❑

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COMDEX

Reflecting on Comdex past and present

BY JEFF EVANS

This year's Fall Comdex in Las Vegas was like everything else in Vegas these days "bigger and better than ever." Taking place in ever expanding exhibit facilities, in a city that sprouts new concrete casino mountains overnight showcasing technology that seems to change by the minute, the Fall Comdex has come to symbolize a digital world moving at breakneck speed.

This year, Comdex was characterized by several trends that should be of interest to most computer users. There were many cheap, new high-capacity mass storage technologies, and amazing progress was demonstrated in handheld computing, Internet-based commerce network and server technology, graphics, digital audio and digital video and input devices.

In addition to technology trends, market trends were also readily visible. The brand name computer makers are hustling after the exploding small- to medium-business market and there is also a concerted effort to develop a mass market for consumer level digital photography and imaging.

The city on the edge of tomorrow

Las Vegas is a city with none of the usual historical reasons that justify the creation of a great city. It's not on a major trade route, it has few natural resources, it's in the middle of a vast barren desert surrounded by mountains, it is not holy to any religion (except perhaps to those who worship the $$$) and there was no large local population nearby when it was founded.

Las Vegas is a city made possible by a hydroelectric dam, which powers the neon lights and waters the golf courses, and by the laws throughout the rest of the U.S.A. which restricted wide open gambling and other morally and politically incorrect behavior. Vegas is a city of big dreams, basic low appetites and Lady Luck.

It may have been inevitable that it would attract the hard driving visionaries and hustlers of the personal computer industry back in 1979. At that first Comdex (COMputer Dealer EXpo) there were fewer than 5,000 attendees and a little more than 100 exhibitors—a few percent of today's totals.

But, one thing was the same then as it is today: a guy named Bill Gates. When Gates' name was put forward as a keynote speaker at the first Comdex, the reaction was, "who wants a ____ high school kid?" (Actually, Gates was a university dropout, though he still looked like a teenager in those days.)

Coincidentally, Gates' picture appeared on the cover of *Fortune* magazine several months before the first Comdex opened. The validity of choosing Gates to speak at Comdex became clear: the "kid" had managed to put himself at the centre of the personal computing revolution. Gates, and Microsoft, have stayed there through all 19 years of Las Vegas Comdexes.

Key concepts

So as ancient tradition dictates Gates made the opening keynote speech at this year's Comdex. It was one of his best to date. Obviously wanting to gain a sympathetic hearing for his portrayal of himself as just another pursuer of the American Dream, Gates set a theme of "Why I love My PC."

One of the reasons he loves his PC is that he can use the Internet to collaborate with a group of lawyers to fight the U.S. Justice Department's efforts to modify Microsoft's business practices. "Using Internet tools to save Internet tools!" he crowed. Gates also poked fun at his famous persistence in promoting the Microsoft party line, showing a sequence of video clips where he repeated his mantras of scalability and other Microsoft themes over and over.

Gates strove to portray Microsoft as a company that promotes healthy competition rather than monopolies, and which frees people to reach a fuller personal and professional potential, rather than enslaving them. ❑

■ EMERGING TECHNOLOGIES

Technology directions for '98

BY GRAEME BENNETT

As Senior Editor at *The Computer Paper*, I saw a lot of technologies cross my desk in the closing months of 1997 that hold great promise for 1998. Here are some of the technological trends to watch for in the Canadian marketplace.

Chips and boards

Now that AMD has announced its intent to produce a single-edge connector (SEC) Pentium II type CPU, and Intel has announced its plans to expand the Pentium II line with lower-priced models, the Pentium II wave will gain momentum at least until the next-generation 64-bit I-64 (Merced) microprocessor, being developed by Intel and Hewlett-Packard, hits the market in 1999.

Upgrades and OverDrive processors for legacy systems notwithstanding, I expect the all-new requirements of ATX motherboards and SDRAM systems to make 1998 a good year for those selling ACPI-enabled clones and yes, used PC systems. I'd place my bets on Pentium II motherboards that allow those with an eye on switching to NT in the near future to hedge their bets with the option to add more than one CPU. Faster bus speeds will provide a mid-year boost and Moore's Law will presumably hold true throughout the year, taking performance past the 1 GHz (giga hertz) level by 1998.

How will Cyrix and AMD fare? Presumably, the low price of systems based on Cyrix MediaGX chips will assure their place in the market although Intel's announcement of its intent to expand the Pentium II line to include lower cost models is likely to put even greater pressure on its competitors. AMD has already suffered a string of disappointing financial results recently and the resignation of Vinod Dham, group vice-president of AMD's computation product group, is only the latest symptom of deep problems there.

Despite Cyrix's pursuit of the US$500 PC market, I expect the MediaGX chip's laggardly FPU performance to conspire against its success in 1998 as processor hungry applications like voice recognition and digital signal processing reach the mainstream, when digital image processing, 3D and digital video already are. After all games are some of the biggest CPU hogs out there and the games of '98 promise to be more grandiose and cinematic than ever.

Conversely, the performance boost of the latest G3 series of chips—and IBM's expected delivery of 480 MHz and 500 MHz PowerPCs in the coming months—will keep Mac users and other PowerPC advocates happier in 1998 than many were in the aftermath of the Mac clone wars of 1997. Depending on how soon the 1 GHz level is attained (IBM is presenting a white paper on its 1 GHz PowerPC at a conference in February), the Alpha, PowerPC or Merced could be the power users' processor of choice in 1998 and beyond—with Intel's offerings likely to matter most to PC users, of course. For 1998 though, the price/performance advantages of the PowerPC G3 chips are notable, particularly in the portable arena, where the raw performance of PC portables simply doesn't compare with that of their PowerBook G3 cousins.

Despite the merits of their products, I speculate that neither Motorola nor Apple will have an especially good year. The uncertainty of the Mac market in 1997 and the market share losses suffered by Apple are likely to continue, even if Apple has announced a strategic alliance or merger with Oracle (as I fully expect they soon will) by the time you read this.

Storage

For new PC buyers, Ultra ATA is likely to be on the shopping list for 1998 systems, along with AGP, "OnNow" ACPI power management, SDRAM, USB and the other buzzwords associated with "LX"-class motherboards and Windows 98. I suspect SCSI will enjoy a resurgence in popularity in 1998 as users start to look for ways to beat the "out of IRQs" trap that IDE systems lead to. With today's systems often equipped with multiple hard disks, Zip and Jaz drives (etc.) and CD-ROM or CD-R drives, scanners and other peripherals now firmly in the general-user category, the average user is running perilously close to running out of IRQs on his or her PC.

Selling them on the idea of using SCSI as a solution to this is a good plan and usually results in a happy customer, too. Presumably Adaptec will keep its dominant position in the market, although motherboards with "100 Percent Adaptec 2940"-compatible controllers onboard stand a chance, if the price for the SCSI option isn't as outlandish as it was during most of 1997.

I have serious reservations about the prospects for DVD in 1998. On one hand, a DVD drive makes sense as a CD-ROM replacement on PCs and Macs, and DVD does demo well. Plus, the movies on disc are reasonably priced. These factors will help DVD drives become standard fare on brand name PCs from Compaq, NEC and other big-name vendors throughout the year. By sheer force of will, we are destined to see a lot of DVD marketing this year.

However, the infighting that has, at this writing, prevented agreement on a standard for DVD audio and the threat of obsolescence that the (technically more sophisticated) Divx standard presents are only part of the problem faced by the DVD consortium. DVD consumers may be too confused and afraid of getting burned by a replay of the Betamax scenario to invest wholeheartedly in DVD technology during 1998. For what it's worth, I also predict you'll read plenty of ad campaign materials designed to allay these fears, usually pointing out some cooked statistic that DVD is the most popular product category ever introduced in this-or-that market.

Until DVD-RAM reaches a comparable price-point, the emergence of low-cost CD Read/Write (CDRW) systems and the burgeoning interest in backing up CDs makes it a safe bet to predict healthy sales of CDR and CDRW systems—another reason to "think SCSI." And if CDR systems continue to ship with troublesome software like GEAR, then software upgrades to Adaptec's line of software (including Easy CD Pro for Windows 95 and Toast for the Mac) or Ahead's excellent and bargain-priced (US$69) Nero 3.0 for Windows will enjoy good sales, too.

Now that Sony and Fuji have announced yet another ultra-density replacement for the floppy, the future looks dim (again) for the lower capacity LS-120 (and the Toray PhaseWriter and just about anything from SyQuest). Nevertheless, the LS120 or Sony/Fuji drives compatibility with legacy floppy disk data makes these drives a viable replacement for the far-past-its-prime floppy disk as an upgrade—if not a standard item—for those who might have considered a Zip drive in '96 or '97. Zip drives will to continue to be in demand by those looking for a low cost storage solution for desktop and portable models, but their 100 MB capacity will start to look like a disadvantage compared to competing products in 1998.

Portables

Ironically, the ubiquity of CD-ROMs as a method for distributing software came at the same time as the second wave of notebooks without CD-ROM drives. This, of course, spells success for external CD-ROM drives and PCMCIA SCSI controllers or parallel-port systems like the BackPack. In fact, as portables continue to be the leading growth segment of the corporate PC marketplace, I'd expect PCMCIA adapters for desktop PCs to enjoy a sales spurt too.

Subnotebook PCs like Toshiba's Libretto 70CT and tiny offerings from Mitsubishi, Matsushita's Panasonic division and Hitachi cater to the growing awareness that information is power only when you have it at your fingertips. The weight of today's multimedia-intensive notebooks makes them too heavy to lug around to conferences and other travelling situations.

More than any other factor, the fear of losing a notebook and its valuable data is what motivates us to want to carry it with us everywhere. And, for those situations where size matters less than performance, there's Apple's PowerBook G3—at 3.46 kg (7.7 lb.), it's twice as fast as the company's previous 3400C model—already the fastest notebook on the market.

By the way, the emergence of affordable active-matrix LCD panels as desktop monitors isn't likely to take the market by storm, despite the fact that Windows 98 will support multiple graphics cards and CPUs. From what I've seen, almost no Mac users—who've had this capability since 1987—use multiple monitors. However, as 15 inch LCD monitors approach the under $1 000 sweet spot, as I expect them to later this year, they will quickly reach viability as an alternative to the CRT.

Operating systems

Java isn't dead, but it sure isn't looking too healthy. No matter which side of the "100 percent pure vs. Microsoft-enhanced" Java fence you sit on, the smart money isn't betting on Java to show up in any products the average user is going to care about in 1998—and not just because Java's performance is so underwhelming.

Sun's failure to provide a Java 1.1 SDK that runs on anything other than its own operating system and Windows makes claims of "platform independence" a bit of a joke. I'd also expect Netscape to lose even more marketshare as people start to notice that IE4 really is good enough.

I've read enough reports predicting the certain failure of Windows 98 to guess that it will succeed beyond most people's expectations. NT 5.0 will take longer to catch on—many businesses will adopt NT in a server capacity during 1998 and begin rolling it out as a desktop OS after the inevitable bugs in NT

Continued on page 35

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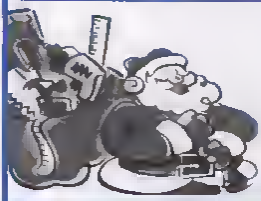

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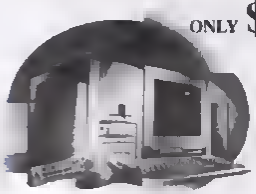

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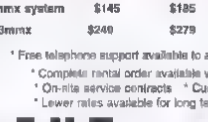

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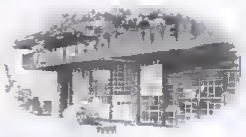

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EMERGING TECHNOLOGIES

Technology directions for '98

Continued from page 30

S/O have begun to shake out In 1999 Windows 98 will benefit from the tremendous interest in digital video 3D audio and the emergence of hypertext markup language (HTML) as a bona fide data exchange format that forms the basis for some of its most compelling features. And whether you think computer TV integration is a good idea or not, Windows 98 has some very intriguing capabilities in this area.

I was surprised Apple wasn't taken over or merged with another company during 1997 but I still foresee this as a distinct possibility Yes, the new G3 processors provide a much-needed kick to PowerMac performance, but I can't help wondering whether Apple's reliance on the PowerPC chip is near an end Wouldn't the Alpha or Merced processor make more sense? At any rate Apple's Rhapsody OS is a wild card It is built upon very good technology but it is uncertain whether the market cares OS/2, BeOS SunOS and other technological marvels are all likely to have a rough year despite their merits The official "Unified" release of Apple's Rhapsody isn't expected until the end of 1998 at the earliest and based on past experience, let's just say I'm not holding my breath

I expect Sun and SGI to have an increasingly unpleasant 1998 as NT whittles away at their core strengths (servers and workstation-class 2D and 3D graphics respectively) leading up to the one-two punch that the I-64 will eventually deliver.

Utilities

I'd bet Internet utilities as a category will create a giant sucking sound this year, as will most utilities outside the must-have categories like antivirus partitioning and data recovery Mail-order and direct-download software sales will grow in popularity as Web-savvy customers increasingly look for deals on the Net.

Communications

If you are a cellular phone user, are you going to renew your cell phone contract when it comes due? Me neither. Like almost everyone else, my next phone will be a PCS unit Dual-mode phones that support PCS and cell roaming will quickly become the standard. PCS's better voice quality and longer battery life will attract the mass market but it will be the data services like almost instant email that really make the difference to mobile professionals When data-smart phones like the Nokia 9000 are widely available and supported in data mode without the unduly limiting mail-server shenanigans early users have to endure This technology will rock

Videoconferencing however will be as much of a dud in 1998 as it was in 1997

Peripherals and software

Color inkjets modems and scanners were hot during 1997 and I expect these trends to continue this year. As a the 56K modem standard is finalized, I would expect many of the fence-sitters to upgrade to 56K model even if the industry begins to more widely move to ADSL or cable-modem systems during the year, as it almost surely will in 1999

At any rate, ISDN looks to be the loser here Ethernet cards and hubs are sure to continue to be solid sellers as more users and offices discover the advantages of networking and data-sharing Digital cameras will continue to be hot especially units like the Olympus 600 which don't unduly sacrifice quality or functionality

Digital video (DV) systems, and the Firewire systems that string them together will continue to grow in popularity, but until DV cameras break the $1 000 price barrier they won't become a serious threat in the analog video marketplace Nevertheless, the emergence of digital video that actually works is becoming a reality with mature titles like Adobe After Effects for Windows and Mac, and editing packages like Ulead MediaStudioPro 5.0 and Adobe Premiere 4 2.

Six color inkjets will become dominant, especially those that deliver better than average price per page I expect USB to finally gain popularity as a method for connecting scanners cameras and the like Really this time

I also expect to see Intellimouse clones to appearing this year, but whether the customer buys a knockoff or the original, the advantage of that wheel is so easy to market people on, it will be a big seller I also expect PCI audio cards and AGP capture-capable-and-3D-enabled video cards to become popular items Digital audio software titles have matured to the point where all-digital recording studios are now viable for pros and cheap enough to attract dabblers

Low cost cards like the Darla Gina and Layla from Event Electronics nicely address this market as do titles like Sound Forge and Cubase. In mainstream PCs, Windows 98's excellent support for ATI and Virge graphics cards will make these products an easy sell For entertainment-oriented users the AWE64 and 3DFX cards will continue to be items often asked for by name

In more traditional productivity software, I predict a less than stellar year for sales of CorelDraw but good sales of Adobe Photoshop and Illustrator Similarly, Corel WordPerfect Office and Lotus SmartSuite will take a beating from Microsoft's offerings, despite their merits And, I am betting Mac users will let bygones be bygones and will make Office 98 a big success on that platform. Similarly, QuarkXPress 4 0 will further put the hurt on PageMaker in the pro desktop publishing arena

Windows CE 1 0 didn't exactly set retail shelves on fire and the confusion arising from tiny 900 g (2 lb) notebooks that can run the full version of Windows 9x will further dilute interest in CE. However, the PalmPilot was a big success and Windows CE 2 0 and similar devices will converge with or evolve into wireless PCS communications devices that will soon be as commonplace as cell phones were in 1997 ❑

Always ready to eat crow Graeme Bennett can be reached at graeme@tcp.ca

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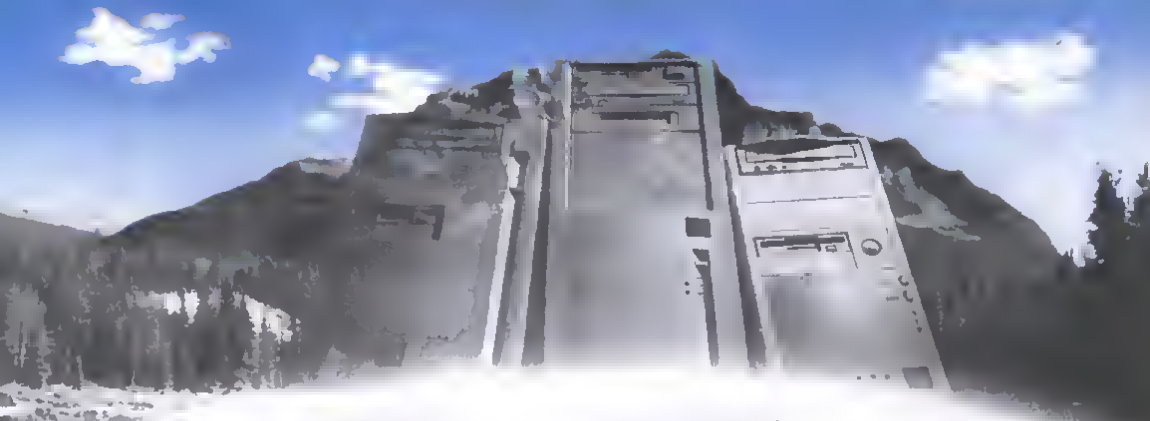

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Lots of Parking on Laurel

Top 10 New Year's resolutions to keep to your computer

BY ROD LAMIRAND

Number 10 Get rid of those old business cards and little pieces of paper. Enter names and addresses into your personal information or contact manager, today! You will save tons of time in the long run.

Number 9: Wipe down the monitor, clean the keyboard and tie up those cords at the back. You might even want to clean out your mouse ball

Number 8 Organize your disks, discard old software and for goodness sake transfer all that data from your old five-inch disks Careful though, if you put it all on 3 5-inch diskettes, you'll be doing it again in a couple of years. The 1 44 MB floppy is on its way out

Number 7: Hook up proper speakers (run your sound card into an old stereo If you don't want to buy expensive high end, self-powered, computer speakers) get a joystick buy a fast game and remember that the computer can be fun too.

Number 6: Delete large, old orphaned, or underused files from your system Back up everything else (use a utility program if you like but doing it yourself is cheaper and more educational).

Number 5: Buy a new chair. If you are not in a comfortable properly adjustable chair you're scrimping in the wrong department.

Number 4: Splurge on new RAM, a second hard drive or (if you spend more than 30 seconds a month on the Net) a new modem. Your computer deserves it, and you want it

Number 3: Get a computer anchor system and check that your insurance coverage doesn't have a computer replacement-cost limit!

Number 2: Check for the Year 2000 bug. Set your system clock to just before midnight 1999 Turn it off Wait a minute. Turn it on. Test your old applications If you have a problem, do a keyword search at http://www.altavista.com for Y2K.

And Number 1: Tell your computer that you have a life Reason with it that you cannot spend all your time at the keyboard Finally, turn it off and go for a walk. It's only a computer, after all. ❑

Everything else is a peripheral.

COMPARE!!!	Houston Technologies	The Competition
Level 2 cache	1MB	Go ask
168 pin memory	3 slots	Find out
ATX form card	Yes	Unlikely
ISA slots	three or four	Usually some
Warranty	Two year replacement	Hard to match
Advanced Graphics (AGP)	Yes	Better check
Post Factory Testing	Yes (24 hour burn-in)	Maybe, maybe not
Pre-jumpering	Yes (with cpu purchase)	For a price
Price/performance	Market leader	Distant second

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- Supports Ultra DMA hard drives and SD RAM
- Four PCI and four ISA slots
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■ EMERGING TECHNOLOGIES

Talking to your computer

A look at dictation and voice command software

BY GRAEME BENNETT

Voice Command software that works

Realize Software's InteractiVoice for Win95/NT4 is the first voice command software for Win95/NT we've seen that uses Microsoft's Whisper speech recognition engine. It's very, very good (although it is not a voice dictation system like IBM's US$99 ViaVoice). You don't need to train InteractiVoice, although those with accents or speech impediments can train the software to improve accuracy. It can open, close and switch windows, click OK or Cancel, open your Address book or email—even learn to open and close apps or documents you specify. Best of all, it's freely downloadable from http://www.realizesoftware.com...it's US$39 if you decide you like the fully functional 10-day trial version.

The Computer Paper spoke to Mike Somlo, president of Realize Software, and asked him why the product doesn't work properly with menu commands in Office 97 or Internet Explorer 4.0. Somlo says: "Floating menu bars present a real challenge since they are not real menus. The only way to access the info in them is through a new Windows API layer that is very hard to use and *extremely* slow. We're at the point where we are doing heavy duty Windows tricks to speed this up (by injecting code into the different application's process space, for example), but the performance may not be acceptable on slow machines."

Somlo says his company licensed the Whisper speech recognition engine from Microsoft for the technology behind the product.

Similar speech technology is also expected to be provided in Windows 98. In May, 1997, Microsoft licensed voice recognition technology from Lernout & Hauspie, a Belgian company specializing in speech recognition. L&H also owns Kurzweil, one of the pioneers of voice recognition. Somlo says L&H is not involved with InteractiVoice in any form whatsoever.

According to Somlo, Microsoft has a bunch of developers that have been working on speech recognition for several years together. Most of them, Somlo says, had been at Carnegie Mellon University where they had done some leading research on speech recognition. Microsoft hired them and brought them out to Redmond, Wash., to work on their stuff. Says Somlo, "Although MS licensed L&H's technology, I think that was relatively insignificant and probably had a minor impact on this version of Whisper." He maintains that Microsoft's more recent venture, investing in L&H (eight percent) and the Flanders group in Belgium, is a much more significant event and shows that Microsoft is counting on L&H and their technology for speech recognition features in its forthcoming operating systems.

Continuous speech dictation a nascent reality

For those who want their computer to handle dictation tasks today, several new titles are worth checking out:

- Dragon NaturallySpeaking Personal Edition (US$359)
- IBM's ViaVoice ($138), ViaVoice Gold (US$149)
- and Lotus SmartSuite 97 (the latest update uses ViaVoice technology in WordPro 97)

Continued on page 42

Intel Send & Receive USB Video Phone **$245**

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EMERGING TECHNOLOGIES

Talking to your computer

Continued from page 40

Of these NaturallySpeaking gave us by far the best results, both in terms of accuracy and speed It also offered better correction options for those inevitable errors that produce such non sequiturs as the word "lettuce" instead of "let us"

To correct a word in NaturallySpeaking, we simply said, "correct lettuce." A list of alternate spellings showed up, which listed "let us" as number two. We said "select two" followed by "click OK" and the change was made You can say "click File...Save" to save files, as you can command the system to click virtually any button or menu item in almost any program It worked remarkably well even when speaking in a normal voice at regular conversational speeds No...longer...do you have...to...talk...like... this.

NaturallySpeaking also allows you to navigate and issue menu commands, by giving orders like "click OK" or "click File...Save" NaturallySpeaking is our recommended solution for Windows 95 voice dictation

IBM s ViaVoice, which also offers continuous speech had some attractive features, but proved less accurate at dictation tasks than NaturallySpeaking, even after several sessions of training (ViaVoice requires no "enrollment" training, although training will improve accuracy in virtually any speech recognition product.) At approximately one-third the price of NaturallySpeaking, perhaps less should be expected. At any rate, IBM touts a better than 90 percent accuracy level before enrollment, with recognition accuracy climbing to 95 percent after enrollment training.

There are several others reasons to consid er ViaVoice however. Most importantly it allows multiple users NaturallySpeaking Personal is limited to a single use

ViaVoice Gold, a deluxe US$149 version of the program, expands the capabilities of ViaVoice in several important areas (details at http://www.software.ibm.com/ia/vaicatypa/us_campa.html) Notably, ViaVoice Gold provides voice correction capabilities missing from the basic version. Gold offers compatibility with Word version 6.0c and 7 to the Word 8 support offered by ViaVoice and adds the ability to speak into any application It also provides voice navigation for the Internet via Internet Explorer. It's all so Star Trekky, isn t it?

An interesting option in ViaVoice is the ability for the computer to read back existing text files in your choice of voice, complete with an on-screen "agent" of your choice. The package includes male and female cartoon heads, a talking pencil robot and a very Monty Pythonesque talking baby's head. Our favorite was an innocuous circuit board with a pulsing round light in the center strongly reminiscent of HAL from *2001 A Space Odyssey*

We found ViaVoice's feature that allowed dictation inside Microsoft Word 97 greatly slowed down that program and seemingly decreased its reliability. We found the "WordPad"-based editors supplied by both IBM and Dragon to be better choices for dictating into

The Lotus WordPro 97 update essentially offers ViaVoice dictation features inside that program through a runtime engine However, the integration of the two seems to be more elegant than with ViaVoice and MS Word.

Both ViaVoice and NaturallySpeaking run under Windows NT 4.0 as well as Win95 Both products include a high-quality headset microphone

ViaVoice specifies minimum system requirements of a Pentium 166 MHz or 150 MHz processor with MMX and 32 MB of RAM To run ViaVoice under NT 4.0, 48 MB of RAM is required NaturallySpeaking specifies a Pentium 133 MHz processor with 32 MB RAM (48 MB for NT) as its minimum requirement.

For those who require a turnkey solution utilizing server-based voice recognition, Vancouver-based Boston Bar Systems Corp. offers VoiceWave its own PC-based voice dictation/recognition system for Windows based on IBM's ViaVoice The system s included audio card handles compression that allows an Ethernet-based network of up to 30 stations to utilize digital dictation applications The minimum hardware requirements aren t as stiff as for competing products. VoiceWave requires an 80486 or greater, 4 MB RAM, Windows 3.x or 95 and any PC-compatible network. ◆

Contacts:

Boston Bar, Tel: 604-686-4502
Web site: http://www.bostonbar.com
Dragon Systems, c/o Canada, contact,
Voice Systems Corp., Tel: 416-410-7856,
Email: wall@voicesystems.com
IBM, Web site: http://www.ibm.com/viavoice
(several other IBM voice recognition products are also listed at this site)

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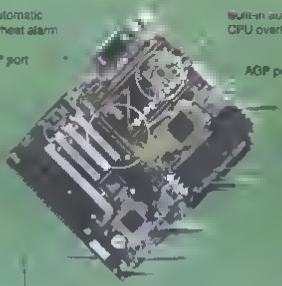

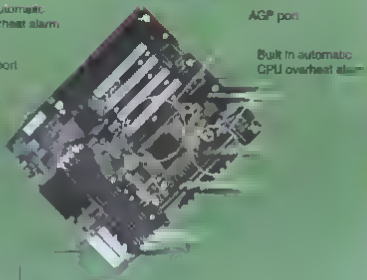

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List of Awards

Publication	Date	Motherboard	Awards
PC Mag. (Taiwan)	December 1996	GA-586HX	"Best Performance"
Wireless Source (Australia)	March 1997	GA-586HX	"Best Performance"
PC Direct	April 1997	GA-586HX	"Editor's Choice"
PC Pro (U.K.)	May 1997	GA-586HX	"PC Pro Value"
DOS/V	June 1997	GA-586BX	"The Today's Choice"
PC Mag. (U.S.A.)	June 1997	GA-586BX	"Best Performance"

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■ EMERGING TECHNOLOGIES

What the road to techno-hell is paved with

Technologies that nearly made it

BY GEOF WHEELWRIGHT

There have been many more failures in the computer industry than there have been successes. For every hot new bit of computer hardware and every fantastic "killer application" produced by the software industry, there are often dozens—if not hundreds—of "noble failures" that have preceded it. Some are nobler than others, just by virtue of the fact that they may have enjoyed limited success—or perhaps provided the basis for some enduring technology or hardware standard. But all failed in the end and thus are doomed to be included in lists like this, where they are at least remembered.

DEC Rainbow

IBM's success with the IBM PC was by no means a certain thing back in 1982 and 1983. While the company enjoyed tremendous sales of what was then an "experimental" venture, it also had competition from its major rivals. One early competitor was Digital Equipment Corporation, which produced its non-IBM compatible Rainbow PC in May of 1982. Even though DEC equipped the Rainbow with both a Z80 processor (for running software written for the then popular CP/M operating system) and an 8086 processor (for running its version of DOS), it soon found that it could not survive the might of Big Blue. The Rainbow soon vanished as the sun went down on DEC's non-IBM-compatible PC business.

Telidon

Forget CompuServe, AOL and the Internet. Canada's first national, graphics-based online service was way ahead of its time. It was produced in the late 1970s using what was then "state of the art" graphical online access technology. Telidon used the "videotext" technology that was then popular amongst governments that were investigating online services. It was supposed to lead the way to allowing all Canadians to have electronic access to a vast range of government services.

It was originally demonstrated on sampler "kiosks" in major cities and allowed humble citizens access to what was then thought to be a vast wealth of information. Home terminals distributed by the phone companies (in lieu of the cost of printing phone books and running a directory inquiries service) were supposed to be the route to access the system.

Unfortunately Telidon was slow, expensive and never supported in a big way by either government or industry. In France, however, a Telidon-like service (known as Minitel) did make its way to the general public via the phone company and is still used by millions in that country today.

Apple III and Apple IIc portable

When Apple went from being a company that started in a garage to being a serious player in a young and exciting industry, it also went in search of an encore to the mega-popular Apple II computer. The company settled on the idea of an Apple III, which would be able to run Apple II software and do a lot more. Loyal Apple II users did not want the change, however, and the Apple III itself was so under-powered, buggy, incompatible and hard to use that it didn't really appeal to the audience of business users that Apple hoped to reach with the machine.

Likewise, Apple's first attempt at producing a portable computer proved a similar challenge. It was a good idea whose time had not come, whose price was too high and whose LCD screen was very hard to read. ➤

■ EMERGING TECHNOLOGIES

Apple Lisa

If there is such a thing as an "elegant failure" it has to be embodied by the Apple Lisa

The Lisa was the first mainstream personal computer to use a graphical user interface, be controlled by a mouse and allow people to run software by double-clicking icons instead of typing commands At $10 000 it was also way too expensive lacked software and was the subject of heated internal debate at Apple It is, however the only computer that this writer has ever seen a dozen cynical and hard-bitten computer journalists truly fall in love with at first sight

When Lisa entered the office, all heads turned and we knew that computing would never be the same again It wasn't—and we all have the Lisa to thank for it

In 1984, the Lisa user interface was applied to a much cheaper machine which you may have heard of the Apple Macintosh. And the rest is modern history

Coleco Adam

What would you have been willing to pay for a computer with word-processing software, a printer local storage and the ability to run games produced for both the major dedicated games consoles of the early 1980s? That was the question asked by the producers of the Coleco Adam in 1983 and 1984 when the company started shipping a Z80 processor based games/computer system that used a tape drive for storage and could play games written for Atari games consoles and those of Mattel's IntelliVision II also included word-processing software and a daisywheel printer into the bargain.

Like most multi function systems the Adam was a compromise that did some things OK, few things well and many poorly It generated a lot more publicity than revenue—although about six million units were apparently sold For its maker, Coleco (the COnnecticut LEather Company) however it was not enough and the company went into bankruptcy in 1984

IBM PC Junior

IBM's first but by no means only, PC failure came with the PC Junior. It was supposed to get IBM into the lucrative home computer market that had been virtually "owned" by Apple and included a lot of new ideas in the

design to try and gain acceptance It allowed software to be loaded via cartridges (a common feature amongst home computers, but unusual for IBM) featured a cordless keyboard that used infrared technology, and had a much lower price than existing IBM desktop PCs

The machine however, proved buggy and not entirely compatible with the IBM PC standard There were also many user complaints about the wireless keyboard which used small er "chiclet" keys instead of the proper full travel keys that users expected on machines from IBM

Other noteworthy noble—and not so noble—failures from IBM in this timeframe include the IBM Portable (IBM s original computer to Compaq s highly successful original "luggable" computer) and the IBM Convertible (an early, poorly received laptop)

TeleCompaq

Compaq has also not been without its share of failures One noteworthy embarrassment was an early attempt to provide a converged telephone/computer It aimed to provide the ability to store a telephone directory and dial telephone numbers directly from the computer—along with a number of other "personal information management" features. Luckily for

Continued on page 50

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• Hub OfficeConnect 3C16700 8P	$120
• Novell Users 5 / 10	$900/1200
• NT 4 0 Server 5 /10	$800/1200
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• ATI @play 8M PCI/AGP	$280/335
• ViewSonic PT775 1600 25	$960
• SONY 17SE2T 1600 25	$995
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• Brother HL1060/1660N	$770/1320
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Motorola 56k Voice int/ext. ... $125/230
Cirrtrve 33 6/56kFlash voice ... $75/$130
33 6k/56k VoiceFaxMod int. ... $58/110
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(PCMCIA see notebook section)
Capture card & Camera. ... $490 0

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Intel. Asus

LT430TX 512k 75-23 MMX ATX ... $160
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Intel ATX Venus P6 ... $155
Intel ATX PRO Dual P6 UWscsi ... $550
Intel AL440LX /with Sound. ... $255/280
Tyan Dual P6 / Dual PII ATX ... $330/420
Tyan 430TX AT ... $160
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Asus 440LX / UW-Scsi ATX ... $255/400
Supra Dual PII 440LX UWscsi ... $620
GA 430TX 512 MMX AT/ATX $145/150
TX 512k MMX AT ... $110
LuckyStar TX512k,k6,M2 ... $125
Shuttle 569A TX512b,75-233,(83bz) $145

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Quantum **ST2.1/3.2G** ... $235/250
Quantum **ST4.3/6.4G** ... $315/420
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WD4 3/5 0/6 4G UIDE $315/375/435
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Quantum4 5/9 G UWscsi ... $740/1100
Seagate Bar4 3/9 UWscsi ... $860/1180
Seagate **She4.3/9** UWscsi ... $980/1550

DVD kits

Panasonic PC DVD kit ... $350
Creative DVD Encore kit ... $590

Sound

Acer16bit /32bit sound card ... $28/48
SoundBlaster 16/Awe64 ... $58/195
AWE64 / Gold (4M) ... $105/240

CD-ROM

12x /24x ide ... $90/105
12x /24x scsi ... $135/160

CD-WRITER

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HP 7100i/e ide Rewriter ... $525/625
Yamaha 400T in/ex ... $540/660
writable cd-disk /Sony ... $3/ 4
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Speakers

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Yamaha M20/Sub/w MT10 ... $95/115
Altec 52/45/55/500 ... $99/115/210/360
Altec 48 ... $190
Labtec 3210/2612 ... $110/220
MicroPhone/Headset ... $8/10

CD Titles (w/CD-ROMonly)

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Essensual bundle ... $130
Corel WP Suit 8 ... $95
DVD disk w [illegible] games ... $8
10 CD with lot games ... $10

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Quantum 4.3G UIDE ... *$315*
OKI 600e (6e) Laser ... *$410*
Viewsonic P775 ... *$860*
Intel Pentium 233 ... *$400*

CPU

Intel. AMD

Intel P5 **150 / MMX 166** ... $140/180
Intel P5 MMX200/ 233 ... $310/425
Intel P6 180/200 ... $255/650
Intel PentiumII-233/266 ... $600/780
Intel PentiumII 300mhz ... $1000
Intel Pentium *Pro 200/512k* ... $980
AMD K5 100/133/166 ... $90/110/135
AMD K6 MMX166 / 200 ... $175/260
AMD K6-MMX233 ... $480
Cyrix 6xMX166/200/233 $130/190/415

VIDEO CARDS

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CL 5446 1M / 2M ... $26/38
S3 Virge 3D 2M /4M ... $48 /65
ATI 3D 2M / 4M ... $69/100
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ATI ProTurbo PC2TV 4/8 ... $160/210
ATI Xpert@works 2M/4M ... $180/210
ATI Xpert@play 4M/8M ... $235/295
ATI xpt@play 4/8M AGP ... $260/320
#9 Resolution 4/8M AGP ... $315/420
Mystique220 2M/4M ... $130/150
Millinnium-II 4M/8M ... $215/330
Monster 3D 4M oem/retail ... $195/270
Diamond V330 4M PCI/AGP $240/255
Stingray 128 with 6M ... $300

SCANNERS

HP 5S 5P/7100C S. ... $200/380/980
Microtek 3/E6/pro ... $185/395/650
UMax 600S/P 1200S ... $225/155/$685

ZIP / TAPES

HP T4000 [illegible] (4 G) ... $430/530
ZIP 100M int/parallel ... $148/180
Zip 100M scsi/ext ... $185/195
JAZ 1G scsi Int/ Ext. ... $385/495
Jaz 2G scsi Int/Ext ... $770/890
SyJet1.5 scsi Int/ext/Para ... $430/550/490
Zip disk / Jaz disk ... $15/114
Travan TR1/TR3/TR4 ... $35/39/43

CAMERA/CAPTURE

Miro DC 30Capture ... $1230
CasioPC Camera ... $480
Kodak DC50/120 Camera ... $630/1080
USR Video Fun kit ... $329
BigPicture kit ... $495
QuickCom color ... $270

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72pin 32 / 64M ... $90/250
Parity 72pin 4 / 8 /16M ... $34/60/80
Parity 72pin 32 / 64M ... $145/410
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SDRAM (10ns) 16/32M ... $60/95
SDRAM (10ns) 64/128M ... $260/650
SDRAM (10ns) 64 0zR ... $280
SDRAM (10ns) 32 w/EEPROM ... $125
ECC DIMM 32 / 64M ... $140 /335
ECC DIMM 128M ... $790
SDRAM-ECC(10ns)16/32M ... $90/150
MAC DIMM 16M/32M ... $75/125
SOJ Video RAM 1M ... $10
RAMs for Notebooks ... available

MONITORS

SVGA 14"/15"/17" ... $200/260/480
Acer 15"/17"(76hz/78hz) ... $330/590/675
MAG **DX15T /D700T** ... $420/830
NEC A500/M500/E500 ... $435/510/510
NEC E700/M700/P750 ... $910/960/1060
NEC P1150 21" 1600x1280 .25 ... $2000
Sony 1[illegible]SX/SE/SF ... $495/540/595
Sony 200SX/SF ... $900/985
Sony 17SE2T/20SE2T ... $1030/1990
Samsung 500P/700P ... $530/930
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Viewsonic P775/PT775 ... $880/960
Viewsonic P810/815 ... $1720/1930
Optiquest V655/V775 ... $370/740
Mitsubishi17TX/21TX ... $1020/1960

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HP 400C/722C/890C ... $230/450/560
HP 6L / 6P /6MP ... $515/945/1190
HP 400 /4000N /5M ... $1450/1580/2390
HP Color 5 / Color 5M ... $5480/8990
HP 4V /5Si ... $2370/3490
Accessory for HP ... in stock

KIDATA. 6e
Panasonic 24pin

Canon

Canon BJC250 4300 ... $200/260
Canon BIC4550 ... $540

Brother

Brother HL730DX+/760DX+ $410/510
Brother HL1260/1660 ... $980/1320

Epson

Stylus 400 (720dpi) ... $270
Stylus 600/800 (1440dpi) $360/495
PhotoStylus 700 ... $645

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Notebooks

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NM200DTF MMX/32m/2.1G/12.1"TFT/14x/33.6 $3250
NM200DTF MMX/64M/3.1G/12.1"TFT/14x/33.6 $3690
NM233DTF MMX/32m/2.1G/14.1"TFT/20x/33.6 $4300

Toshiba

440CDX • P133MMX/16M/1.3G/12.1" DS/10x $2700
440CDT • P133MMX/16M/1.3G/12.1" TFT/10x $3780
460CDT • P166MMX/32M/2.0G/12.1" TFT/10x $4850
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530CDT • P166MMX/32M/2.1G/12.1" TFT/10x $5950
740CDT P166MMX/16M/3.G/13.3" TFT/10x $6850
750CDT • P233MMX/32M/4.7G/13.3" TFT /10x $3990

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TP380ED• P166MMX/16M/2.1G/12.1"TFT/20x $3950
TP770 P233MMX/32M/4G/13.3TFT/W95 $7200
TP770 P233MMX/32M/5.1G/14.1"TFT/W95 $8800

HITACHI

MX166T• P166MMX/16M/2.1G/12.1"/8x33.6/TFT $3600
MX133T• P133MMX/16M/2.1G/12.1"/8x33.6/TFT $2650

Panasonic NoteBook

Panasonic Monitors !!!

Notebook Accessories

• Notebook Memory
8MB +$100 00 16MB +$180 00

• Modems and EtherNet
Motorola 33 6 modem PCMCIA ... $190
Motorola 33.6 FM and Cellula cable ... $280
Megahertz XJ3336T 33 6K/FM/10BT ... $350
Megahertz XJ1650 Modem ... $300
33 6 Pcmcia faxmodem ... $150
PCMCIA *OPT Ethernet ... $140
3Com 10BT PCMCIA ... $230
3Com 3C589C-TP PCMCIA ... $110
3Com 3C5623-TP w/33.6 modem ... $360

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104K/B/Fujitsu8725/4725 ... $18/26/60
MS Natural /TouchPad KB ... $70/65

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■ EMERGING TECHNOLOGIES

Technologies that nearly made it

Continued from page 46

Compaq, the TeleCompaq was spun off as a separate entity based in Dallas and it died quietly—and alone—within a year or too after a much-publicized launch

MSX

Although you won t hear Bill Gates talk about it this way, Microsoft did have a failure in the early 1980s with a home computer operating system/hardware specification that it produced in conjunction with a consortium of Japanese computer manufacturers. It led to the release in 1984 and 1985 of a number of home computers from Japan that conformed to the MSX "standard" but faltered due to lack of software support Gates still deems this deal a success because Microsoft did not lose any money on it

Digital Research GEM

Windows was not always the only choice for a graphical user interface on Intel-based desktop PCs When it was originally introduced in the mid-1980s, GEM looked like it had a good chance of beating Windows to market supremacy To start with, it looked a lot more graphical than Windows and ran on a greater range of hardware (a version of it came built into the Atari ST home computer of the mid-late-1980s)

GEM also came from a company that at the time still competed with Microsoft in the operating system business (with its various versions of the CP/M operating system and then various DOS clones) When Apple complained that GEM (which stood for Graphical Environment Manager) looked too much like the Mac Digital Research obliged by tweaking It a little to look slightly different

Throughout the last half of the 1980s GEM enjoyed considerable success but fell behind when Windows added the capability to "task switch" between one active application and another. The arrival of Windows 3 0 in 1990 put the final nail in GEM's coffin Digital Research itself was eventually sold to Novell Inc—which in turn eventually sold off the company's operating system to former Novell CEO Ray Noorda s Caldera software company

Early editions of OS/2

If early versions of Microsoft Windows faced a challenge from GEM early versions of OS/2 faced a challenge just being credible They were late buggy demanding on hardware and RAM (at a time when RAM was still very expensive) and suffered compatibility problems with DOS applications Despite early efforts by Microsoft to port versions of popular Windows products (such as Excel) to OS/2 Presentation Manager the joint effort by IBM and Microsoft to promote OS/2 as the corporate, "high end" alternative came to a crashing halt with the launch of Windows 3 0 As a result, the famous "divorce" between Microsoft and IBM took place with IBM launching various versions of OS/2 on its own throughout the 1990s in a vain attempt to halt the onward march of Microsoft and Windows.

MCA

Known as Micro Channel Architecture and introduced with the new line of IBM PS/2 (Personal System 2) computers on April 1 1987 MCA was from the very beginning a bit of a joke in the computer industry It was IBM s last great attempt to make proprietary desktop computers that aimed to "lock out" competitors

IBM introduced MCA—a new standard for adding expansion cards to PCs—for two reasons The first was simply that h wanted a way of keeping competitive advantage over the world s PC clone makers (and particularly Compaq) IBM also wanted to be able to improve the performance of expansion cards that used the MCA technology MCA was an expansion card design that was completely incompatible with expansion cards produced for use with the IBM PC, IBM XT and IBM AT models that were popular at the time

MCA did include some smart ideas such as the idea that having MCA could eliminate hardware conflicts between expansion cards by automatically detecting installation information about the expansion card when it was installed. This was via a "reference disk" that users would insert when adding new hardware The reference disk would contain a unique reference number for the card—assigned to MCA expansion card manufacturers by IBM—that would ensure the card did not conflict with the hardware

The idea was good, but the politics were awful Expansion card manufacturers did not want to have to have IBM's seal of approval before designing new cards—and PC makers also balked at the idea of paying license fees to IBM for the right to have MCA in their computers Many major PC makers—including Compaq—never bothered with MCA. This meant that the market for expansion cards never really took off—and that users with an MCA system were at an automatic disadvantage over anyone with standard PC/XT/AT card slots IBM had aimed all its guns at its competitors—and ended up shooting itself in the head instead.

The Sinclair Spectrum, Sinclair QL, BBC Micro and any other British computer sold in North America

Unlike the British sense of humor North Americans just didn't get it. Why would I want an inexpensive "cheap and cheerful" computer like the Spectrum (which was only sold in limited numbers in North America as a special jointly manufactured product with Timex) when I could buy a Commodore 64 or an Apple II? Why would I buy a computer designed in conjunction with a TV broadcasting company for an educational series about using computers (the BBC Micro)? And just what the heck is an Apricot computer?

Those were the questions asked by North Americans as one after another British computer makers brought their hottest-selling PCs across the pond and were vigorously ignored. North American users did not care. for example, that the Sinclair QL used innovative tape loop technology (known as the Microdrive) as an alternative to floppy disks in order to make this early Motorola 68000-based based home computer much cheaper than an Apple Macintosh Price was not the issue—good looks, great software and reliability were

Continued on page 68

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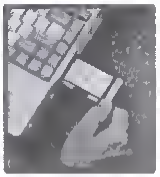
Estimated street price $185 (REX 1) $255 (REX 3)
$50 (docking station)



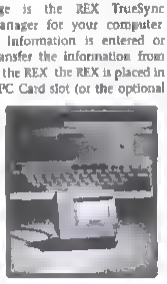
In the 1980s the Macintosh—and shortly thereafter Windows—popularized the "desktop" metaphor. The reasoning went something like this. the computer is analogous to your desk. You've got files you've got space to write you've got a calculator and even a deck of cards hidden in the top drawer in case you want to sneak a game of solitaire. Of course, you can't gun down bloodthirsty aliens with a real desktop, but people tend to forgive the metaphorical oversight

Some years later the Apple Newton—the first personal digital assistant (PDA)—gave us, shall we say, the agenda metaphor. Sacrificing some of the power of a full-fledged computer, the Newton and its many followers contented themselves with being analogues to agenda notebooks, effortlessly keeping track of appointments, contact information, and to-do lists—and, of course, doing a few things real agendas can't do, like teaching Japanese with flash cards.

So what metaphor, then applies to the Franklin/Rolodex Electronics creation, the REX PC Companion? Its job—keeping track of contacts appointments, and to-do lists—is that of a PDA but for the most part the resemblance ends there Unlike other PDAs, the REX looks nothing like a notebook or an agenda the unit is slightly smaller than a business card, and only a few millimeters thick.

Maybe we could call it a business-card metaphor But a business card only "displays" one name and address plus whatever you can scribble in the white space The REX-1 model can hold about 750 records of contact information, the REX 3 has a limit of about 3 000 However unlike any other PDA there's no way to directly enter information into it.

The REX you see is actually a PC Card device with a remarkably clear 2 5-inch (diagonal) LCD screen and five buttons. Included in the package is the REX TrueSync Information Manager for your computer through which information is entered or modified. To transfer the information from the computer to the REX the REX is placed in the computer's PC Card slot (or the optional docking station which connects to the serial port) and the information is synchronized between the program and the REX Maybe we should call it a credit-card metaphor. After all, you can get stuff out of it just about anywhere but you have to be in the right place to put stuff in



Better yet, we can skip the whole idea of a metaphor and accept it as something new, and perhaps a little more honest. The allure of PDAs has always been the ease with which you can carry around an awful lot of information (at a fraction of the size weight and price of a laptop), and the idea that you can jot down information any time you please (like a real notebook) and instantly have it filed, organized, or calculated (unlike a real notebook) But, honestly, how realistic is that? No matter how easy it is to master a PDA, they're always designed to make it easier to retrieve information than to enter it. As it's become easier to synchronize information ➤

HARDWARE

between a PDA and a computer, it's also become easier to transfer information from existing databases spreadsheets, or word processors into these convenient handheld gadgets Actually entering anything more than a few lines is tedious and sometimes frustrating

REX and Pilot

I put this idea to the test by replacing my Palm Computing Pilot with the REX for a week. The Pilot is the first PDA I've ever enjoyed using, and we've been inseparable for over a year—longer than I've ever managed to stick with an actual agenda notebook. So it was with some trepidation that I went cold turkey and used the REX for seven days

Much to my surprise the world didn't end, nor was I reduced to crying and begging for mercy I first transferred all of the information from the Pilot to the REX and discovered the TrueSync Information Manager was more full-featured and thoughtfully laid out than the Pilot's more austere Pilot Desktop One particularly nice feature is that multiple calendars and contact databases can be maintained in TrueSync, and selectively transferred to the REX Better still each contact database can be organized differently, with a different number of fields and/or different field names

(Incidentally you don't have to use TrueSync if you don't want to TrueSync can handle data from Microsoft Outlook, Schedule+, Lotus Organizer, and Sidekick 98 right out of the box)

Lacking any kind of pen or keyboard the REX depends solely on five buttons for any kind of input Although the manual doesn't use this analogy, I found the interaction almost, dare I say it Web like Four of the buttons are used for navigation The up and down buttons move between a screen's different options and SELECT activates a highlighted option. The surprisingly misnamed HOME key acts much like the BACK button on a Web browser bringing you to the previous screen in the hierarchy until you get to the main ("home") screen The fifth button, view switches between different views in order to provide more information on a given screen There is no on/off switch pressing any button brings the REX to life, and it switches off after a user-definable period of inactivity (one to five minutes)

Using these five buttons, it takes a few seconds longer to get at information than on a Pilot, but for the most part it's quite easy to zip through the on screen calendar or Rolodex. The lack of a search function that covers all of the databases is a little frustrating, but being able to sort contact information by first name, last name, or company simplifies things somewhat.

As much as I like the REX (it has replaced my Pilot, after all) I can't recommend it for everyone. Some people do need to enter information on the fly Others need to use the custom software that the Pilot and other PDAs have to offer But if getting to your information quickly and easily is your main concern, you can't go wrong with REX. ❑

Emily Townsend (emily@uwo.org) is really quite organized, once you get past the clutter

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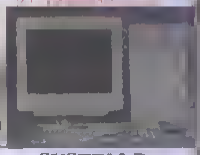

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RJ-45 Cat. 5 Cable, 50/100 Ft. ..... $26/$39
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TCP TEST LABS

Extreme notebooks

High performance to go

BY STEVE HALINDA AND TIM BINGHAM-WALLIS

Products tested
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Daewoo 160 MMT
Eurocom 7200T
Everex 6000XT
GVC G753P
Hyperdata
IBM ThinkPad 770
IPC
NEC Versa 6220
Ultinet

If you re looking to buy one of the many affordable notebook computers on the market this Lab Test won't be required reading You see this month we've gone after the true mobile beasts. We're talking about machines with configurations that will put most people's desktop PCs to shame The last thing we were concerned about was the cost of these gems, having concentrated primarily on features and performance

What's new under the hood?
Whether it's notebooks or desktops the one thing that power users obsess over is the processor speed. No matter what the latest MHz readings are they just never seem to be enough.

Having heard the cries of many, Intel has recently announced two new mobile processors, the 200 MHz MMX and 233 MHz MMX models. Each offers much more than just an increase in clock speeds Both use Intel's latest 0.25 micron process technology they consume up to 50 percent less power than the previous generation of mobile processors, and are equipped with Intel's MMX technology

Thanks to the new 0 25 micron process technology the core voltage of the CPU has been reduced to an astonishing 1 8 volts while consumption is only 3 4 watts for the 200 MHz model and 3 9 watts for the 233 MHz variety These new low power consumption rates translate into longer battery life for the user, while providing an opportunity for manufacturers to introduce other peripherals into the machines that would otherwise not be feasible.

When it comes to choosing a processor, the bottom line is always a matter of how much number crunching are you really going to do? If you use a notebook mainly for word processing or data entry when you re away from your main desktop computer, you don't need the computers featured in this Lab Test Why spend several thousand dollars on a machine equipped with all the latest bells and whistles when you're not going to exploit even a fraction of the machine's potential?

On the other hand, if your mobile computing needs are very CPU intensive, such as complete multimedia presentations, CAD or—gasp—games then it would be in your best interest to look more towards a high speed processor. Currently you have quite a few choices: mobile processor speeds are available in 166 200 and 233 MHz. The latter two use the new 0 25 micron process as mentioned above and therefore will cost more Be careful however, because choosing the right processor speed could save you quite a bit of cash, which you could put towards adding more RAM into the machine.

And while on the topic of RAM this is one thing that neither notebooks nor desktop PCs can ever seem to get enough of As far as notebooks are concerned we re back to the same old issue of what you really plan to do with the machine Some of the models we tested this month boast memory capacities of a whopping 64 MB Is that something that would be of great benefit to you, or could you get by with 32 MB? Although it may seem like the coolest thing if your notebook has 64 MB of RAM realistically about half of that RAM will actually be used at any one time unless of course you're planning to run more than one application at a time or work with large files.

The thing to always keep in mind about notebooks is that despite your best efforts, you will never get a notebook to perform on par with a similarly equipped desktop PC with the same amount of RAM, hard drive video or processor Our tests this month confirm this, and show that the fastest notebook in this survey equipped with a 233 MHz processor and 64 MB of RAM performs on par with a desktop system with a 166 MHz MMX processor with 16 MB of RAM

But don't be alarmed this is quite normal Despite the fact that notebooks now have processors equal in speed to those of the fastest desktop processors, the overall system speed is considerably different from desktop machines because of several other factors that determine performance These factors include the video subsystem hard drive performance and system input/output rates which still lag way behind desktop counterparts.

For example don t go looking for Millennium II chips inside your notebook PC because you just won't find them. Likewise don't expect the hard drives in these machines to have the same technical specs as hard drives for desktop machines For the most part, the graphical capabilities of any notebook computer should be adequate for most needs but they are far from speedy Basically with your notebook you shouldn't expect to be doing any photographic touch ups in Photoshop Sure it's possible but why would you want to?

Hard drive size in notebook computers has come a long way in a very short time. Today it's quite common to find 3 1 GB drives in high-end notebooks, with the option of installing a second drive to double that capacity But once again, the hard drives in these machines may offer you a tremendous amount of mobile storage, but don't expect high transfer rates or super-low access times, because the technology in hard drives designed for notebooks is considerably different from that found in desktop drives This is not to say you'll spend hours waiting to retrieve your most recently used documents but bear in mind that it will definitely be slower than what's inside the PC on your desk.

A few manufacturers are already beginning to offer DVD-ROM drives in their latest notebook models This is quite surprising, especially when you consider that DVD drives are very slowly beginning to gain acceptance with the home market and sales of the drives are still quite limited This is mostly due to the current costs involved and you can expect the same for the DVD option in your notebook. Sure It's a great feature to have but you can expect to find it as a standard option only on really high-end units such as those we review this month or as an optional accessory

Another type of storage device being introduced in the new line of notebooks is the LS-120 drive These 120 MB drives read and write data to the traditional 720KB and 1 4 MB floppies as well as the new 120 MB media NEC is using the LS-120 drive as the standard floppy device While certainly more expensive than a typical $35 floppy drive they aren't much more than $150 for internal versions. All things considered it makes sense to switch to these drives because not only are you getting a floppy drive with 83 times the capacity of a regular drive but it's also backwards compatible and considerably faster than its predecessor.

In the world of data communications some notebooks are available with modems built into the unit thereby saving a PC card slot. It s also much cheaper to have the modem built-in, as opposed to buying it separately later on While 33 6Kbps models are still the norm when it comes to notebooks, the 56Kbps variety is certainly available and has been for a number of months now Although the final standards on the 56Kbps modems has not been finalized you'll defi-

Continued on page 63

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Email: worldwd@public3.bta.net.cn
Website: http://www.intergate.bc.ca/business/worldwid

NEWTECH CANADA COMPUTER LTD.
TEL: (604)327 2003 FAX: (604)327-0081
Email: newtech@public.bta.net.cn
Website: http://www.intergate.bc.ca/business/newtech

PRICE IN RED: *For Knowledgeable Buyer*

Warranty Policy.

SYSTEMS: 1st month full service
2nd to 24th month, $20 each service
(or PARTS Warranty applied)

PARTS: Handling fee
1st 10 days Free
After 10 days,$10 for HardDrive,Monitor,MotherBoard,
Printer: $5 for all other types

PERIOD: Manufacture Warranty

PRICE IN BLUE: *For Common Buyer*

Warranty Policy:

SYSTEMS: 2 years Parts & Labour unless specified
PARTS: NO Handling fee
PERIOD: Manufacture Warranty

Customers may save handling fee if manufacture have direct service and customer deals with their service center directly (see WebSite)

NetWork System

Pre Made Win95 NetWork System

M.S.Win95 $105 NetWork Card $30

Cable Extra

Case

(approx.)

Desktop	$57	$62
Tower 13	$41	$46
Tower 15	$42	$47
Tower 19	$57	$62
ATX 19	$93	$98
Full Tower 25	$108	$113

CD ROM

(approx.)

Acer 24X	$107	$112
Panasonic 24X	$103	$108

Controller Card

(approx.)

Adaptec 2910B	$128	$133
Adaptec 2940U	$237	$242
Adaptec 2940UW	$295	$300

CPU

(approx.)

AMD K5 166	$138	$143
AMD K6-166	$195	$200
AMD K6-200	$248	$253
AMD K6 233	$478	$483
Intel P150	$148	$153
Intel P166 MMX	$184	$189
Intel P200 MMX	$295	$300
Intel P233 MMX	$365	$370
Intel PII 233	$595	$600
Intel PII 266	$750	$755
Intel PII 300	$1093	$1098

Hard Drive

(approx.)

SHARP 250MB PORTABLE	$Call	$Call
W.D 2.1GB EIDE	$225	$230
W.D 3.2GB Ultra	$272	$277
W.D 4.3GB Ultra	$338	$335
W.D 6.4GB Ultra	$420	$425
Quantum 2.1GB ST	$250	$255
Quantum 3.2GB ST	$263	$268
Quantum 4.3GB ST	$343	$348
Quantum 6.4GB ST	$437	$442
Quantum 4.3GB Fireball SCSI	$462	$467
Quantum 4.5GB UW SCSI	$787	$792

Keyboard

(approx.)

Ergonomic	$54	$59
Fujitsu 4725	$53	$58
Fujitsu 8725	$22	$25
M.S Natural	$70	$75
WIN 95 104	$15	$17

Memory

(approx.)

8M 72Pin	$33	$38
8M 72Pin EDO	$31	$34
16M 72Pin	$50	$55
16M 72Pin EDO	$44	$47
32M 72Pin	$100	$104
32M 72Pin EDO	$86	$92
32M SD Ram	$94	$98
64M SD Ram	$265	$270

Modem

(approx.)

Acer 33.6K Int. Fax/Voice	$71	$75
Acer 56K Int. Fax/Voice	$101	$107
Supra 33.6K Int. Fax/Voice	$78	$82
USR 33.6K Int. Fax/Voice	$118	$122
USB 56K Int Fax/Voice	$174	$179
USB 56K Ext (Retail)	$259	$264
USR 56 Ext Fax/Voice (Retail)	$271	$276

Monitor

(approx.)

Acer 15 56c	$328	$333
Acer 17 76e	$560	$570
ADI 15 E40	$325	$330
ADI 17 5P	$620	$630
Daytek 15 1536D	$270	$275
Daytek 17 1731D	$495	$505
Panasonic 15 S15	$347	$355
Panasonic 17 S70	$644	$653
Vonex 14	$184	$189
Sceptre 15 P511	$299	$304
Sceptre 17 P73	$565	$575
NEC 15 E500	$501	$511
NEC 17 E700	$891	$901

Motherboard

(approx.)

Asus TX P4	$162	$167
Asus TX 97E	$200	$205
Asus P2L97 PII	$250	$253
GIGA 586 ATV VX	$118	$123
GIGA 686 LX PII	$235	$240

Mouse

(approx.)

Logitech PS/2 2B	$14	$16
Logitech PS/2 3B	$21	$23
Logitech Serial 2B	$14	$16
Logitech Serial 3B	$16	$18
MS IntelliPoint	$41	$46
MS.I Mouse V2 Serial	$77	$80
Zoltrix Serial 2B	$7	$7
Genius 2+1B NetMouse	$15	$17

Printer

(approx.)

Canon BJC 80 Portable	$363	$373
Canon BJC 240 SE	$173	$178
Canon BJC-4300	$374	$379
Epson Stylus 400	$268	$273
Epson Stylus 600	$352	$357
Epson Stylus 800	$434	$504
HP DJ 692C	$327	$332
HP DJ 890CXI	$514	$608
HP OfficeJet 350	$608	$630
HP LJ 6L	$574	$539
HP LJ 6P	$960	$975

Scanner

(approx.)

HP ScanJet 5S	$261	$266
HP ScanJet 5P	$173	$178
UMAX Astra 600S	$245	$250
UMAX Astra 1200S	$421	$428

Sound Card

(approx.)

Acer FX 3D	$24	$27
Acer AWE35 Pro 3D	$40	$43
Sound Blaster 16 PnP	$55	$58
Sound Blaster AWE64	$102	$107
Diamond Monster 3D Audio	$Call	$Call

Video Card

(approx.)

ATI All-In-Wonder 4M	$286	$291
ATI Pro Turbo PC2TV 4M	$174	$179
ATI Xpert @Play 4M	$253	$258
ATI Xpert @Work 4M	$221	$226
ATI 3D Xpression 4M	$109	$114
ATI 3D Xpression PC2TV4M	$135	$139
Cirrus Logic 5446 PCI 1M	$27	$30
Diamond Stealth 3D 2200 2M	$70	$73
Diamond Monster 3D ACC4M	$Call	$Call
Matrox M3D UPGRADE	$150	$155
Matrox Millennium II 4M	$222	$227
Matrox Mystique 220 4M	$180	$188
Rainbow Runner Studio	$232	$237
S3 3D Virge 2M	$45	$48
S3 Trio 64+ PCI 1M	$31	$34
Touch Digital Video Conf Kit	$228	$233
USR Big Picture Camera Kit	$Call	$Call

Others

(From)

Plain Mouse Pad	$1.2	$1.2
Blank CD	$4.5	$4.5
586 Cooling Fan	$3.25	$3.25
Mic with stand	$6	$6
Basic Surge Power Bar	$6	$6
Headset W/Mic&Vol Ctrl	$10	$10
Zip Disk	$19	$10
PII Cooling Fan	$21	$23
ISA Network Card	$24	$26
PCI Network Card	$30	$33
Creative DVD Encore DXR2	$Call	$Call
IOMEGA BUZ	$Call	$Call
Yamaha CD Writer CDR 400t	$545	$550

Special Price

SUPRA 33.6 EXT	$Call
USR 28.8 INT V34	$Call
3C 509B NETWORK	$Call
MATROX MYSTIQUE 2MB RETAIL	$Call
MATROX MILLENIUM II 4MB RETAIL	$Call
MATROX MYSTIQUE 2MB Upgrade Mod.	$Call
ATI 3D EXPRESSION 2M	$Call
ATI 3D 2M EXPRESSIONSO RAM	$Call
CL 5429	$Call
S3 TRIO64+	$Call

SEE WEBSITE

TCP TEST LABS

Extreme notebooks

Continued from page 60

nitely want to check with your Internet service provider (ISP) to determine which modems would be compatible with their setup and make your purchase accordingly

Perhaps the most exciting news to hit the airwaves about notebooks computers is the advances made in screen size Just one year ago we were in complete awe when we saw the first units equipped with 12.1 inch screens Running those machines at 800x600 was a real pleasure And six months after our January Test Lab in 1997 we saw the first units to feature 13 3-inch screens capable of an astounding resolution of 1,024x768

Well, another six months have passed, and as we all know, nobody in this industry sits by and watches things happen A small number of the new machines we reviewed this month have even larger screens, measuring 14 2 inches diagonally This is really quite extraordinary when you consider that on average the viewable area of a 15-inch desktop monitor measures 13.8 inches!

Although the internal resolution is still 1,024x768 the extra screen real estate makes it all that much easier on the eyes.

Our tests

We asked manufacturers to send us what they consider their top-of-the-line machines Our minimum requirements were a 166 MHz MMX processor and 32 MB of RAM

What we got was nothing short of notebook bliss We saw machines configured with the latest 233 MHz MMX processor hard drives up to 5 1 GB in size RAM totaling 96 MB and screen sizes up to an amazing 14 2 inches All machines were benchmarked with power savings disabled and set to run at a resolution of 800x600 with a 16-bit color depth Although our notebook reviews tend to see a large number of models on average, this month there were a number of complications that resulted in the absence of some models that would otherwise be present.

Our contenders

Compaq Armada 7350MT

Compaq notebooks have a reputation for being incredibly eye catching and packed with features—and they tend to score really well on bench mark tests of all sorts This month we reviewed the Armada 7350MT from Compaq s notebook lineup

Although not its latest model It still easily fits within the specifications we were looking for The 7350MT is equipped with a 166 MMX processor 256KB of Level-2 cache and 32 MB of RAM which can be upgraded to a grand total of 128 MB With a 12.1-inch TFT display and 2 MB of video RAM the 7350MT can display graphics in 800x600 at a 16-bit color depth

The unit features a built-in floppy drive and a 2.1 GB hard drive for storage although a CD-ROM is optional, either 8x or 20x models. Like other Compaq models we ve experienced, the 16-bit sound was incredibly clear. As an added bonus, this machine comes with a built-in 33 6Kbps faxmodem, which saves you from having to use up a PC card slot

Performance was quite good for a machine with this configuration nearly matching the performance of some of the 200 MHz models in the survey The Armada 7350 has a suggested retail price of $5,400 and comes with a two-year parts and labor warranty

Daewoo 160 MMT

The latest in the Daewoo line of notebooks is the 160MMT, which features a 166 MHz Pentium with MMX processor, 256KB of Level-2 cache, 40 MB of RAM and a 12.1 inch TFT display

It wasn t that long ago that Daewoo first got involved in the notebook business under its own brand but in that short time it's managed to introduce some very slim notebooks that offer a great mix of features and competitive pricing

This particular model, with a 166 MHz MMX processor, scored quite well on the benchmark tests, achieving a final score of 140 This particular model is also equipped with 2 MB of video RAM a 16 bit sound system, and a 10x CD-ROM drive, which is interchangeable with the unit's floppy drive As an added bonus you get a spare battery and carrying case with the system, which is priced at $3,990 and comes with a three-year parts and labor warranty

Eurocom 7200T

Eurocom is known for being among the very first to introduce the latest possible features into a notebook computer.

The 7200T we reviewed this month was equipped with the latest 233 MHz MMX processor from Intel, 512KB of Level-2 cache and 64 MB of RAM The large 13 3-inch active matrix screen allows for resolutions up to 1,024x768 using 4 MB of video RAM Storage comes in the form of a 3 1 GB hard drive which should provide any mobile user with more than adequate storage space

Both the 16x CD ROM and floppy drive are built into the unit saving you from having to swap them back and forth As far as performance goes, this machine did quite well, finishing with a score of 148 overall The 7200T as tested is priced at $4,395 with a one-year parts and labor warranty This model is also available with a 14.1 inch TFT screen for an additional $500

Everex 6000XT

Although we've tested notebooks bearing the Everex name in the past, we ve seen nothing even remotely close to what this unit can do

Powered by a 233 MMX processor 512KB of Level 2 ➤

TCP TEST LABS

cache and a staggering 96 MB of RAM, it was clear even before the machine started the benchmarks that it would finish near the top of its class. Using a 13.3-inch TFT screen, this machine can handle resolutions up to 1,024x768 with 2 MB of video RAM. The hard drive size at 3.1 GB is more than adequate for most users' needs, as is the removable 16x CD-ROM drive.

For multimedia applications, the Yamaha OPL3 chipset is a great choice for excellent sound reproduction. Also included with this system are a number of popular software titles from Microsoft, including the popular Encarta 97 encyclopedia, Microsoft Works and Money 97. With an overall score of 151, this machine is perfect for any power-hungry user.

GVC G753P

A new contender in our notebook tests this month is this notebook from GVC. The 753P is currently available with a 166 MHz MMX processor, which is the model we received. Standard RAM configuration on this machine is 16 MB although our test unit had a 32 MB upgrade for a total of 48 MB.

The unit has a 12.1-inch TFT display capable of resolutions up to 800x600 in 16-bit color and uses the speedy NeoMagic graphics chipset with 2 MB of video RAM onboard. Both the 8x CD-ROM and floppy drives are built into the unit, and it comes with a 2.1 GB Toshiba hard drive. Rounding out the system is a 16-bit sound system with wavetable as well as an RCA video output connector and game port.

Performance on this unit was quite good with an overall score of 139 on our benchmark tests. The G753P has an estimated street price of $3,799 and comes with a one year parts and two-year labor warranty.

Hyperdata

One of few machines to make use of the latest 14-inch LCD screens was this Hyperdata unit. This is one laptop that leaves very little to be desired. With its 233 MHz MMX processor, 64 MB of RAM, a 3.1 GB hard drive and 20x CD-ROM drive, at first you'd think you were working with a desktop machine.

But it's very much a portable, having a slim design that measured 4.5 cm (1.8 in.) high. With 2 MB of video RAM, this machine can produce images at 1,024x768 using 16-bit color. The popular Yamaha OPL3 chipset is also found in this machine, which is great for everything from games to presentations. Priced at $5,460, this machine comes with a one year parts and labor warranty, and includes a spare lithium ion battery and a carrying case.

IBM ThinkPad 770

Upon opening up the ThinkPad 770, we knew we were in for a real treat. When it comes to designing a high performance notebook with all the bells and whistles, IBM leaves very little off anyone's wish list.

The ThinkPad 770 is, in every sense, a real performance machine. It's powered by the latest 233 MHz MMX processor from Intel, 512KB of Level-2 cache and 32 MB of RAM. Storage is one thing you won't soon have to worry about with this machine. For starters, you get an impressive 5.1 GB hard drive as standard with the option of adding an additional 5.1 GB drive into the ThinkPad's Ultrabay.

If that weren't enough, there is also the option of installing a VST Zip drive for a handy 100 MB removable storage unit. The LCD panel on the ThinkPad 770 is of the new 14.1-inch variety. Capable of resolutions up to 1,024x768 in 16-bit color, the screen on the ThinkPad is without a doubt the most impressive one we've ever encountered. According to IBM, it's 36 percent brighter than the screens on the ThinkPad 760 line of notebooks.

When it comes to multimedia once again, this machine has it all and then some. How does a 20x CD-ROM drive sound with a 3D Dolby Surround sound system? As an option, you can choose to have a DVD player installed into the ThinkPad's Ultrabay. Imagine playing a full-length feature film with crystal clear

Continued on page 68

EXTREME NOTEBOOK SURVEY

	Compaq Armada 7350MT	Daewoo CPC-7550TCA4	Eurocom 7200T	Everex	GVC G753P	Hyperdata 5027	IBM ThinkPad 770	IPC Companion	NEC Versa 6220	Ultinet
Processor (MHz)	Pentium 166 MMX	Pentium 166 MMX	Pentium 233 MMX	Pentium 233 MMX	Pentium 166 MMX	Pentium 233 MMX	Pentium 233 MMX	Pentium 233 MMX	Pentium 200 MMX	Pentium 233 MMX
Cache	256KB	256KB	512KB	512KB	256KB	512KB	512KB	512KB	512KB	512KB
RAM (tested/max.)	32 MB / 128 MB	40 MB / 40 MB	64 MB	48 MB	48 MB / 80 MB	64 MB / 128 MB	32 MB / 160 MB	64 MB / 128 MB	32 MB / 128 MB	64 MB / 72 MB
Screen	12.1 TFT	12.1 TFT	13.3 TFT	13.3 TFT	12.1 TFT	14.2 TFT	14.1 TFT	13.3 TFT	13.3 TFT	12.1 TFT
Max. resolution	800x600	800x600	1,024x768	1,024x768	800x600	1,024x768	1,024x768	1,024x768	1,024x768	800x600
Video RAM	2 MB	2 MB	4 MB	2 MB	2 MB	2 MB	2 MB	4 MB	2 MB	2 MB
Hard Disk	2.1 GB	2.1 GB	3.1 GB	3.1 GB	2.1 GB	3.1 GB	5.1 GB	2.1 GB	2.1 GB	2.1 GB
CD ROM drive	Optional	Removable 10x	Internal 18x	Removable 18x	Internal 8x	Removable 20x	Removable 20x	Removable 18x	Removable 20x	Internal 20x
Floppy drive	Internal	Removable	Internal	Removable	Internal	Removable	Internal	Internal	Removable	Internal
Audio	16-bit	Crystal 16-bit	ESS 1878	Yamaha OPL3	16-bit	Yamaha OPL3	SRS 3D	ESS 1878	16-bit	ESS 1788
PC Card slots	2	2	3	2	2	2	2	2	2	3
Pointing device	Track point	Touchpad	Touchpad	Touchpad	Touchpad	Touchpad	Track point	Touchpad	Touchpad	Touchpad
Dimens ins cm (inches)	30.5x23.5x3.9 (12x9.27x1.54)	30x22x4.77 (11.8x8.66x1.88)	30x23.3x5.33 (11.8x9.2x2.1)	31x24.38x4.57 (12.2x9.6x1.8)	30x22.8x5.58 (11.8x9x2.2)	31.9x25.6x4.57 (12.59x10.1x1.8)	31.2x25.4x5.58 (12.3x10x2.2)	32.2x28.4x5.84 (12.7x10.4x2.3)	29.7x25.1x5.54 (11.7x9.9x2.2)	29.7x23.3x5.58 (11.7x9.2x2.2)
Palm Rest cm (in.)	—	— (3.3)	(3.75)	8.3 (3.3)	7.3 (2.9)	7.3 (2.9)	4.8 (1.9)	—	8.89 (3.5)	9.4 (3.7)
Weight, kg (lb)	2.72 (6)	2.56 (5.5)	3.7 (8.14)	(2.8)5.9	(3.2)7	3.8 (8)	3.5 (7.8)	4.15 (9.14)	3.5 (7.9)	3.6 (8.1)
Battery type	Lithium Ion	Lithium Ion	NiMH	Lithium Ion	NiMH	Lithium Ion	Lithium Ion	Lithium Ion	Lithium Ion	Lithium Ion
Operating system	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95
Infrared port	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Extras	Internal 33.6K modem Carrying case	Spare battery Carrying case		Smarts 97 MS Works Money 97	Carrying case	Carrying case Spare battery	Internal 33.6K modem	Office 97 SBE		Carrying case
Windows Benchmarks										
Desktop publishing	120	123	152	149	121	139	153	134	139	136
Desktop graphics	219	226	208	193	216	187	208	179	194	183
Desktop presentation	141	147	141	162	142	153	168	154	149	163
Word processing	128	129	148	146	125	141	152	139	134	142
Spreadsheet	143	147	152	165	144	163	173	156	156	170
Database	114	116	132	126	118	126	138	130	122	124
Overall Sysmark32	138	140	148	151	139	146	158	143	144	153
Contact (Tel)	800-652-6672	905-415-7290	613-224-6122	800-734-3677	905-736-3360	800-327-4777	800-465-7999	888-448-4472	800-388-0479	800-513-7732
Internet contact	www.compaq.com	www.daewoo.com	www.eurocom.ca	www.peanuts.com	www.gvc.ca	www.computron.com	www.ca.pc.ibm.com	www.ipc.ca	www.nec-computers.com	www.ultinet.ca
Price	$5,400 SRP	$3,990	$4,300	$5,499	$3,799	$5,499	$6,599 SRP	$4,900	$5,179 SRP	$3,290
Warranty (years parts, labor)	3P 3L	3P 3L	1P 1L	2P 3L	1P 2L	1P 1L	1P 1L	2P 2L	3P 3L	1P 1L

Note All prices listed are estimated street prices unless otherwise indicated.

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INFOWAVE COMPUTER INC.

MMX Power Station

MMX-166/200/233

Pentium MMX 166/200/233MHz CPU
512K Pipeline Burst Cache
16MB EDO RAM
2.6GB Ultra DMA HDD
Fujitsu 1.44MB 3.5" FDD
PCI 64bit 4MB MPEG Card
15" N-I L-R SVGA Monitor
104 (Windows 95) Keyboard
Mid-size Tower Case
Genius NetMouse + Pad
EIDE 24x CD-ROM
Aset FX-3D 16 PnP Sound
80W Amp. Stereo Speakers
Compton's Encyclopedia & 4 CD Titles

MMX-166 1138 $38/mo*
MMX-200 1248 $40/mo*
MMX-233 1348 $43/mo*

5-year service & 2-year parts warranty
Options
Acer 33.6K VoiceModem+$69/ Windows 95(SR II) +$120
32MB RAM (from 16M) +$45/3.5G HD (from 2.6G) +$40
Microsoft Office 97 Small Business Edition +$278

Financing Available

MMX-200/233

Pentium MMX 200/233MHz CPU
Intel TX Chipset w/ 512K PBC
32MB EDO RAM
3.5GB Ultra DMA HDD
Fujitsu 1.44MB 3.5" FDD
Matrox MILLENNIUM 4M MPEG Card
Viewsonic 15" Monitor (1280x1024)
104 (Windows 95) Keyboard
Mid-size Tower Case
Genius NetMouse + Pad
Panasonic 32x CD-ROM
Soundblaster AWE 64 PnP
100W Amp. Stereo Speakers
Microsoft Encyclopedia CD Pack

MMX-200 1698 $54/mo*
MMX-233 1798 $58/mo*

5-year service & 2 year parts warranty
Options
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64MB RAM (from 32M) +$90/ 4.3G HD (from 3.5G)+$80
Microsoft Office 97 Small Business Edition +$278

Financing Available

P-II Ultimate Solution

Pentium II 233/266

Pentium II (Klamath) 233/266MHz 512K Cache
Intel Portland PD440FX M/B
32MB EDO RAM
2.6GB Ultra DMA HDD
Fujitsu 1.44MB 3.5" FDD
ATI 2D Xpression 4MB MPEG Card
15" N-I L-R SVGA Monitor
104 (Windows 95) Keyboard
ATX Tower w/ 235W P/S
Genius NetMouse + Pad
EIDE 24x CD-ROM
Soundblaster 16 PnP
80W Amp. Stereo Speakers

PII-233 1868 $60/mo*
PII-266 2038 $65/mo*

5-year service & 2 year parts warranty
Options
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64MB RAM (from 32M) +$99/ 4.3G HD (from 2.6G)+$110
Microsoft Office 97 Small Business Edition +$278

Financing Available

P-II 233/266/300 w/APG

Intel Pentium II 233/266/300MHz 512K Cache
Asaw 440LX AGP Motherboard
32MB SDRAM
3.5GB Ultra DMA HDD
Fujitsu 1.44MB 3.5" FDD
ATI AGP xpert@work 4MB SGRAM
Viewsonic 15" Monitor (1280x1024)
104 (Windows 95) Keyboard
ATX Tower w/ 230W CSA P/S
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Panasonic 32x CD-ROM
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PII-300 2698 $87/mo*

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Financing Available

Multimedia System

Intel P-150/ MMX-166

Pentium 150/ MMX 166 CPU
MMX Ready M/B w/ 512K PBC
16MB EDO RAM (Exp. to 256MB)
1.2GB E-IDE HDD (Mode 4)
Fujitsu 1.44MB 3.5" FDD
PCI 64bit 1MB MPEG Card
14" N-I L-R SVGA Monitor
104 (Windows 95) Keyboard
Mid-size Tower Case
MS-Comp. 3B Mouse + Pad
EIDE 24x CD-ROM
Aset FX-3D 16 PnP Sound
80W Amp. Stereo Speakers

P-150 898 $29/mo*
MMX-166 948 $31/mo*

5-year service & 2-year parts warranty
Options
Acer 33.6K VoiceModem+$69/ Windows 95(SR II) +$120
32MB RAM (from 16M) +$45/1.7G HD (from 1.2G) +$35

Financing Available

K6 MMX 166/200/233

AMD K6 MMX 166/200/233 MHz CPU
512K Pipeline Burst Cache
16MB EDO RAM (exp. to 256MB)
1.7GB E-IDE HDD
Fujitsu 1.44MB 3.5" FDD
PCI 64bit 2MB MPEG Card
14" N-I L-R SVGA Monitor
104 (Windows 95) Keyboard
Mid-size Tower Case
MS-Comp. 3B Mouse + Pad
EIDE 24x CD-ROM
Aset FX-3D 16 PnP Sound
80W Amp. Stereo Speakers
Compton's Encyclopedia & 4 CD Titles

K6-166 1048 $33/mo*
K6-200 1138 $36/mo*
K6-233 Call

5-year service & 2-year parts warranty
Options
Acer 33.6K VoiceModem+$69/ Windows 95(SR II) +$120
32MB RAM (from 16M) +$45/2.6G HD (from 1.7G) +$50

Financing Available

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Asus Dual Pentium II Motherboard
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64MB SD DIMM RAM (max. 384MB)
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PII-300 2668 $85/mo*

5-year service & 2-year parts warranty
Options
2nd P-II 266/ 300 CPU +$758/ 1098

IBM PC Server 315

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Kingston EtherX Ethernet Combo $135

MegaHertz
XJ10BT 10Base T/ XJ 10BC Combo $147/178
XJ4336 33.6/ XJ 4336M 33.6 Motorola-C $286/318
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Q71 17" .28 1280x1024	$618	GT775 17" .25 1600x1280	[illegible]
V773 17" .26 1280x1024	$[illegible]	PT775 17" .25 1600x1280	$958
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Asus TX97 / ATX 512K	$208/228
Asus P2L97/P2L97S	$208/368
HT VX PRO / TX	$85/115
Luckystar VX/ TX	$108/138
Intel AL440LX / LXG	$288/478

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Fujitsu 1.7G/2.5G/3.5G	$178/228/288
Quantum Ultra 2.1G/3.2G	$228/288
Quantum Ultra 4.3G/6.4G	$348/438
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Mitsumi 4x2 Int. IDE Kit	$498
Yamaha 6x4 Int. / Ext.	$648/698
Yamaha 6x4 Int. / Ext. kit	$748/868
Yamaha 4001T IDE Recert / Recd	$778
Creative DVD / DVD II Kit	$[illegible]
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All prices reflect 2% cash discount and are subject to change without prior notice • All trademarks are the property of their respective owners. (Effective From December 28 1997)

TCP TEST LABS

Extreme notebooks

Continued from page 64

sound from a notebook only 5.58 cm (2.2 in.) thick. No matter what you may use a notebook for, the ThinkPad 770 is truly an incredible machine. And while it may not be cheap by any means, it's definitely something you don't ever want to let go of once you've held it.

The ThinkPad 770 has a suggested retail price of $9,599 and comes with a standard one-year parts and labor warranty.

IPC

Computers bearing the IPC name are well-known to us here at TCP Labs as are the company's notebooks.

The unit we received this month for review was equipped with a 233 MHz MMX processor, 64 MB of RAM, and 512KB of Level 2 cache. With a 13.3-inch TFT screen and 4 MB of video RAM, this unit can handle resolutions up to 1,024x768 in 16-bit color. A 2.1 GB hard drive should provide adequate storage when you're on the go. A 16-bit sound system using the ESS 1878 chipset and a 16x CD-ROM drive will make your multimedia applications all the more enjoyable. Included with this system is a copy of Microsoft Office Small Business Edition, perfect for both home or office use. Priced at $4,900, this system is backed by a two-year parts and labor warranty.

NEC Versa 6220

From NEC comes the new Versa 6220, its latest line of high performance notebooks that not only perform but are very versatile when it comes to accessories.

The particular model we received was equipped with a 200 MHz MMX processor, 32 MB of RAM and 512KB of pipelined cache. The 13.3-inch TFT screen was incredibly sharp and able to produce images up to 1,024x768 in 16-bit color using the NeoMagic 128XD chipset with 2 MB of video RAM. The hard drive was a 2.1 GB unit, which can be upgraded to a 5.4 GB model.

Thanks to the VersaBay II slot, you can install any of the following: a second hard drive, an LS-120 drive, floppy drive, Zip drive or a 20x CD-ROM drive. NEC has also announced the new model 6230, which unfortunately was not available in time for this roundup but look for it in an upcoming issue.

Ultinet

Always ones to make its presence known are machines from Ultinet. Whether it's their low prices or high performance, they always manage to catch your eye.

The machine we tested this month had a little of both. It was incredibly well priced and managed to score extremely well on out bench marks. Equipped with a 233 MHz MMX processor, 512KB of Level 2 cache and 32 MB of RAM, this machine has a little something for everyone: both casual and power users. This unit was one of only two machines that used a 12.1 inch display. Not to worry because it was still very capable of addressing a resolution of 800x600 at 16-bit color with 2 MB of video RAM. A 2.1 GB hard drive is used for storage, while an internal 20x CD-ROM and ESS 1788 chipset are the building blocks of the multimedia division.

Both the floppy and CD-ROM drives are internal, saving you from having to swap them back and forth as is the case on several of the machines we tested. Equipped with a lithium ion battery and a carrying case, this unit is priced at $3,290 and comes with a one year parts and labor warranty.

Editors' choices

Performance: IBM ThinkPad 770

This award goes to the machine with the most features, the ThinkPad 770 from IBM. Absolutely nothing is left out of this machine and to top it off it scored very impressively on our benchmarks. It's not cheap, but it sure is one fine piece of craftsmanship.

Price/Performance: Ultinet

If you're looking for a notebook computer that packs a punch without completely draining your wallet, check out the Ultinet system we reviewed this month. It offers an excellent mix of great features, excellent performance, and great overall value. It took second place on the overall benchmark scores, and was beat only by the $9,600 IBM machine.

Overall: Eurocom 7200T

One of the most enjoyable machines to work with this month was the Eurocom 7200T. It has a very nice look and feel, and is equipped with all the latest toys the industry has to offer. The best news is that you won't have to mortgage your home to buy one! ❑

Technologies that nearly made it

Continued from page 50

Today Britain enjoys a thriving PC manufacturing industry from places like the IBM and Compaq factories in Scotland—but little from any "home grown" PC makers as most have long since vanished.

Two-inch floppy disk drives

Popular in the early 1990s as a smaller alternative to 3.5 inch floppy disks (which after all were first introduced in 1984), the smaller disk format never really took off. It was used in a few machines—such as a notebook computer produced by Zenith Data Systems—but appeared to be too incompatible for most PC users. It also underscores the fact that floppy disk technology is the one area of PC design that has changed the least in the past 13 years. While capacities have increased (and reliability has improved), it is still possible to take DOS-formatted floppy disks from 1984 and read them on computers produced in 1997. What other storage technology has shown this longevity?

This is by no means an exhaustive list of the failed and near-failed technologies of the last 15 years, but rather a select list of some of the more interesting flops. It would look a book to tell the complete story of technologies that never made it—but, as luck would have it, that would probably be a flop too! Still, it would be a lot of fun to write. ❑

WHAT'S NEW

Continue from page 10

Pompeii of Italy in technical drawings and Daniel Seed of Canada in the abstracts category. In the publishing area, grand prizes went to Brian Le Tran of Canada for corporate communications, Brad Beverly of the USA in the third party solutions category and Mark Leary also of the USA in the business category.

The winning images can be viewed on Corel's Web site. —*Grant Buckler*

Contact: Corel http://www.corel.com

Disaster recovery for Windows 95 users via a Zip drive • ROYAL LEPAGE (NB)—Iomega Corp. and Symantec Corp. say they have teamed up to solve a persistent bug under the saddle of Windows 95 users—the need to drop down into an MS DOS to recover critical files of disaster strikes. Win95 is too big to run successfully from a standard 3.5 inch floppy of the sort used as emergency boot disks by so many utilities, Newsbytes notes.

Symantec's and Iomega's Norton Zip Rescue (ZPR) will use the utilities Utils not yet released Symantec's Norton Utilities 3.0 and the real estate available on Iomega Zip drives to fix problems from within a running copy of Windows 95 itself. The new system will run from the Zip drive instead of the corrupted drive. ZPR can also run from Iomega's higher capacity Jazz drive—but not from any other type of removable drive, according to Iomega's director of Zip partnerships, George Meyer.

With ZPR a user creates a disaster recovery Zip drive disk that is tuned to a particular system. When a crash occurs, the user reboots onto the Zip drive, using a floppy in drive A with "just enough intelligence to point the system to the Zip drive," Meyer said. Once booted to Win95 on the Zip or Jazz drive, a software "wizard" from Symantec takes over and tries to solve the problem. If it succeeds, the user restarts the computer and proceeds as if nothing had happened. All of the actions take place within Win95, officials also say. Symantec says NZR will be a standard feature of Norton Utilities 3.0 and will retail for US$79.95.

Contact: **Iomega**, Web site: http://www.iomega.com
Symantec, Web site: http://www.symantec.com

Japanese Windows 98 set for quick launch • HIKONE (NB)—Microsoft Japan says it is trying to launch the Japanese language edition of the new Windows 98 operating system a month after launch of the English language version. That software is planned for release sometime in the second quarter of 1998. The timing is a big improvement on first of Windows 95 which launched three months after the English language version first went on sale.

iStar PSINet merger proposed HookUp reorganizes • OTTAWA (NB)—PSINet Inc. of Herndon, Virginia, has announced a offer to acquire Star Internet Inc. The deal would create Canada's largest Internet service provider (ISP) by merging iStar with PSINet Ltd., PSINet Inc.'s Toronto-based Canadian subsidiary.

The deal, worth about $85 million, is subject to a number of conditions. One is that iStar and PSINet can come to a satisfactory arrangement with Bell Canada, with which iStar has a network provisioning agreement. Nadir Desai, president of PSINet, said the transaction is expected to be completed by the end of January.

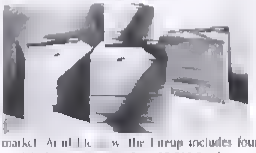
The merged company will be known as PSINet and will be a wholly owned subsidiary of PSINet Inc. Combining the two companies will create an ISP that provides access to about 350 points of presence, including those maintained by PSINet in the US and internationally.

Another Canadian national ISP, HookUp Communication Corp., is also struggling and announced plans in November to file a proposal under the Bankruptcy and Insolvency Act to reorganize its operations. The company said it has enough cash to continue operations but wants to reach a fair arrangement with creditors that allows it to stay in business. HookUp has sold parts of its operations in an attempt to raise capital.

Effective the end of November, HookUp ceased operations in Vancouver, Windsor, Woodstock, London, Kitchener, Waterloo, Guelph, Oakville, Toronto, Ottawa, Montreal and Halifax. The company says it is consolidating its Internet services with Netcom Canada and urges subscribers to open their accounts to Netcom.

Contact: **iStar**, Web site: http://www.istar.ca
Netcom, Web site: http://www.netcom.ca
PSINet, Web site: http://www.psi.net

HP Laserjet 4000 launched • MISSISSAUGA (NB)—Hewlett Packard Canada has introduced the LaserJet 4000 line of printers to the Canadian market. Around the lineup includes four models. List prices range from $2,010 for the standard LaserJet 4000 to $2,869 for the 4000 TN.



Two Canadians sue Microsoft Network • TORONTO, Ont. (NB)—Microsoft Canada Inc. is playing down the launching of a class-action lawsuit against its Microsoft Network unit by two Canadian subscribers who claim they were unfairly billed. The suit, which was launched in mid-November and is open to other MSN subscribers across the country, is seeking $75 million.

The plaintiffs allege they were overbilled for use of the Microsoft Network, and one claims to have been unable to cancel the service. The suit, filed in Newmarket, Ont., also claims that no reports of account use were available to the subscribers.

Ken Nickerson, general manager of Microsoft Network in Canada, said the dispute is "being dealt with" and claimed the amount of alleged overbilling was only $275.

"We're pretty saddened I would say that we have a couple of customers who feel that they have a discrepancy with their bills," he said at a press conference held to introduce new Canadian content offerings on MSN.

Contact: Microsoft Network Canada
Web site: http://ca.msn.com

Net Shepherd to get into Internet ratings consulting • CALGARY (NB)—Net Shepherd Inc. has built its business on filtering online information according to ratings based on the votes of a "democratic Internet rating community," the company calls http://www.netexplorers.com. Now the firm wants to use its knowledge of that process to help other groups that want to create their own Internet rating communities.

Net Shepherd said it will provide consulting to communities, organizations and corporations that want to set up Internet rating groups. The firm will provide project management for a consulting fee and will charge an annual fee for the use of its rating and filtering technology.

Contact: Net Shepherd
Web site: http://family.netshepherd.com

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20X *CD-ROM*
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Wavetable Stereo Audio support **3D Sound**
MMC *Type with Two batteries*

$ 4,895
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MMX Dream Book

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MMX Notebook
Pentium **MMX** *200 MHz*
20X *CD-ROM*
2MB *Video RAM*
12.1" TFT *Active Matrix LCD*
2.0 GB *Hard Drive*
32 MB EDO *Memory (exp to 48 MB)*
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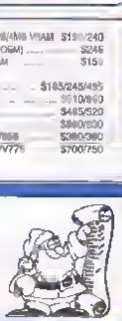


The Computer Paper
Small Business Computing

Business briefs

CyberAngel tracks stolen computers • FRANKLIN Tenn (NB)—Whether it's stolen data or a stolen desktop or laptop PC Computer Sentry Software Inc (CSS) says its CyberAngel software will track the thief and tell the owner where to find the culprit

Dyrk Halstead, CSS president and chief executive officer explains "Our program sends out an alarm whenever there is unauthorized use on the system. .. Our monitors can locate unauthorized system entry within two minutes of break in or attempt to reconnect the modem back into the corporate network or put it on the Internet We then give the legitimate owners the name, address and a map showing where the person is calling from "

Unauthorized access locks up all communication ports, including keyboard and mouse so information on the hard drive or a corporate network is inaccessible

CyberAngel can be downloaded from the Internet from InfoWar.com's Web site The software for single users retails for US$25 and US$60 per year for the monitoring service Corporate prices vary depending on number of systems hooked up to the service.

Contact: CSS
Web site http://www.sentrysnc.com
InfoWar Web site
http://www.infowar.com

NetNames unveils top-level domain search Web site • LONDON England (NB)—NetNames, which now claims to site world's largest domain name registry, has opened a new Web site designed to provide a single point of reference for anyone who wants to know about the new top-level domains The site allows Web users to scan the current directories of Web domain names to find out if their name or chosen domain has already been selected Access to the site is free.

Contact: NetNames
Web site http://www.gtld.com

StorageTek Canada debuts remote backup service • TORONTO (NB)—StorageTek Canada, a division of Storage Technology Corp , has developed a remote backup service for PC users with Windows Initially

Continued on page 72

Eight paths to success, which one is for you?

TCP's guide to goal setting programs

BY CHUCK GALLOZZI

Goal setting and success

It's often said that just three percent of the population sets goals. It is this three percent that are the big achievers, the dream catchers The rest of us are like rudderless ships drifting in the sea of life Our destination? Who knows? We arrive wherever the currents and tides take us

Why don't more of us take charge of our destination? Although there may be many reasons, I believe the main explanation is that no one taught us how to do so. Goal setting programs can teach you how to set goals and manage them. To understand how they work, let's watch our hypothetical subject, Joey working through a goal setting program

Joey takes control

Joey's new program suggests that Joey set goals in all areas of life family business financial spiritual health and more Being young, Joey's chief concern now is career, or lack of one So, Joey decides to start with a career goal

Currently Joey waits tables, but dreams of succeeding in the entertainment business, so Joey sets a career goal of entertainer! Granted the goal does appear a bit vague, but at least it's a starting point It can always be edited and refined later

The program now forces Joey to reflect on what steps are needed to move closer to the goal So Joey makes a list of the things that first come to mind

- Join a Toastmasters' club.
- Write comedy routines
- Participate in amateur comedy night at clubs
- Audition as a stand up comic.
- Take modeling courses.
- Become a model
- Get an agent
- Take acting classes
- Work as a movie extra
- Work in TV commercials.
- Join relevant associations for networking
- Build a portfolio.

Continued on page 73

Managing those contacts

New releases add sychronization and Internet functions

BY ROD LAMIRAND

It would be nice if there were clear and solid lines around which we could categorize software programs The reality is that as companies try to continually add functionality to their products, in hopes of broadening their market appeal the lines blur The category known as contact managers is a cross between personal information managers (PIMs) and sales force automation (SFA)

Contact management (CM) software is business-centric and runs as a standalone program or as one of a number of computers connected—but not as a server application In theory contact management programs can have hundreds of users accessing thousands of contacts However when a company needs that level of access, control and power they are really looking to an SFA solution CM software is best suited to a smaller number of users, say under 50.

The CM field has moved in two directions at once For the most part these programs have increased abilities to incorporate Intranet and Internet email, Web pages and group scheduling Secondly, they have increased support for external word processors and other programs Originally, CM programs contained their own text editors However they could not compete on features with full fledged programs like Microsoft Word Lotus Word Pro or Corel WordPerfect Rather than trying to compete most contact managers now link to external programs.

Another area where this category of software has improved is in paging and remote synchronization abilities If you own a pager or a laptop you may find your new contact manager will work better with those devices than ever before

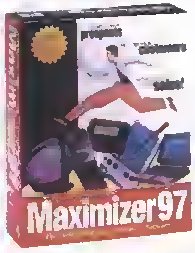
A third area of innovation is in the use of the Internet for things other than Web surfing Certainly they all have a field to enter a company or person's Web page But often you can share files or publish to your Web site from the program, save hypertext markup language (HTML) pages in a contact's data area and/or use Internet email as a form of group scheduling

There is no fair way for us to select one of these programs over the others for this article Thousands of people use each for a number of different reasons. Each has strengths that make it appropriate for some businesses but not others. Then there is the fact that even the simplest CM program takes a real commitment in time and effort to master These are highly functional and complex programs with many features.

If your staff have skill with one it is likely they will want to stay with that line of products Fortunately, there is little compelling reason to jump ship Act! GoldMine Maximizer and Janna Professional are all recently updated products For the company information systems manager or small and home office user who must choose a program there is considerable homework to do In fact, it can be so difficult that there are companies specializing in identifying your needs and helping you decide on a solution (an example is Serex Services, at http://www.swiftonto.com/serex)

To help get you started, and to see what is out there, we have a short overview of the products in this area.

Maximizer 97is
From Maximizer Technologies Inc.
Suggested retail price $179



A long time favorite is Canadian-owned Maximizer. The most recent version of the product is called Maximizer 97is The "is" stands for Internet savvy The program is a very flexible, list based contact manager that uses the well-known Btrieve database engine The core

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Business briefs

Business Briefs

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StorageTek will offer the Rex service only in Canada but the company plans to take it to world markets in a few months

The backup utility works over an Internet connection storing backup files on a central site maintained by StorageTek. The Rex software can be set up to dial up an Internet connection at any prescribed time upload files that need to be backed up, and disconnect again according to StorageTek. If a customer needs to restore files, Rex can provide the entire contents of the hard disk on a CD-ROM within 24 hours company officials said. Each customer will have an identification code that must be entered to obtain access to the backups he said, and all the data will be encrypted.

The cost of the service starts at $25 per month, and the computer to be backed up must have a dial-up or dedicated Internet connection The service is available as of Dec 2, and Rex software is available from the StorageTek Web site

Contact: StorageTek Canada,
Web site: http://www.storagetek.com/rex

Lucent displays interactive conference call software • ANAHEIM, Calif (NS)—Lucent Technologies has unveiled software that lets users set up interactive conference calls from their PCs The OneMeeting Solution software allows up to six participants to talk while sharing the same documents, Dean Harvey, Lucent's general manager of collaborative conferencing, says.

The computer-telephony integration software, developed by Bell Labs, links existing corporate intranets to any business telephone system he said "giving users the ability to conduct real-time reliable voice and data conferences with the simple click of a mouse

With OneMeeting Solution, an individual can set up a voice and data call that lets participants simultaneously access and edit the same file from their own PCs, according to Harris OneMeeting Solution resides on a business's intranet or extranet, and connects to a business telephone system, such as Lucent's Definity Enterprise Communications Server (ECS) or Merlin Legend through a local area network (LAN) interface card.

To set up a OneMeeting Solution conference, users need a business telephone connected to a standards-compliant private branch exchange (PBX), a PC with a Java-enabled Internet browser, and a T120-standard data sharing application such as Microsoft NetMeeting which can be downloaded from the Internet.

The software is scheduled for release in mid February starting at $125 per user for customers who already have Lucent's PassageWay Computer Telephony Integration based server software for Novell Netware or Windows NT or a $200-per-user, turnkey solution providing computer telephony integration functionality a LAN interface and OneMeeting software

Contact: Lucent Tel. 1-888-4-LUCENT

Small Business Computing

Eight paths to success

Continued from page 71

Next, the program directs Joey to break down each of the above sub-goals into tasks and show the dates that they will be performed. Joey thought the first sub-goal, "Join Toastmasters," would be a good idea to develop speaking skills and gain experience speaking before groups. Joey then divided this sub-goal into the following tasks.

- Check my community newspaper for Toastmaster meetings in my area
- Visit three clubs as a guest
- Choose one club to join
- Join in the training program
- Join in speech contests.
- Become a member of the executive committee.

After scheduling the above tasks, Joey continues by adding and scheduling tasks for each of the remaining 11 sub-goals (write comedy routines, participate in amateur comedy night at clubs, etc.) Joey will have the chance to further refine and embellish the goals when reviewing them each day. As goals are completed, new ones will be regularly be added always advancing toward the ultimate career goal.

In only a matter of days Joey realizes life now has direction! Even the table waiting job has meaning—part of the salary can be used to pay Toastmaster club dues. Today Joey is moving toward a dream—and succeeding.

Back to reality

The power of goal setting is that it breaks down overwhelming dreams into easily manageable tasks. Will Joey succeed? We can't say, but the chances are better than if Joey didn't go through the goal-setting exercise. What will Joey become? A movie star? Great speaker? Top model? Again, no one knows at this stage. One thing is certain: as long as Joey persists in the goal-setting program, success in the entertainment industry will come, in one form or another. Congratulations Joey!

Goal setting programs can help you

There's more to goal setting than I outlined above, but at least you are now familiar with the general idea. You may not need a computer to set goals, but here are some of the ways goal setting software can help you.

- Teach you how to set goals
- Simplify and automate goal setting procedures.
- Make it easy to manage, review, and edit your goals
- Monitor and display your progress in the form of reports, tables and graphs
- Eliminate fear by reducing overwhelming goals into easily manageable tasks. Increase confidence by displaying your successes
- Motivate you to add new and more challenging goals.
- Help you to stay focused on your goals
- Help to clarify and expand your vision
- Force you to set achievement dates
- Show you what needs to be done daily with a to-do list.
- Remind you of approaching tasks

We are now ready to introduce you to eight goal setting programs, eight paths to success. Unlike spreadsheets or wordprocessors that all share similar appearances and features, goal setting programs vary widely. This is due, in part, to them not having been around long enough for a standard to be established. Moreover the chief designer of a program may be a psychologist, scientist, motivator, businessperson or computer programmer which also explains why the programs take different approaches.

Rather than delve into each program at great length, I will concentrate on their differences. Fortunately, six of the eight programs are available on the Internet as 30-day trial versions (shareware) so you can try them out before deciding which is the best program for you.

GoalMaker

From Access Able Systems Pty Ltd
Platform Win 3.1/95
Registration price US$99

Most helpful. GoalMaker, from Australian developer Access Able Systems is packed with more help than any of the other programs. If you're interested in goal setting and wish to learn as much as possible about the topic, this may be the program for you. Look at what it offers you in the way of help

1. An Introduction to Goalmaker full-screen folder with 10 tabs jammed with useful information
2. Tutorial screens that help you every step of the way
3. Superb online help. When clicking on contents in the help menu, two screens open. All subjects appear in the form of a

Continued on page 76

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Small Business Computing

Eight paths to success
Continued from page 73

tree in the right hand window Click on a subject In that window and all topics about that subject appear as branches of the tree Click on a topic that interests you and all the information appears in the left hand window

4 Context sensitive help Are you about to do something but are confused? Hit F1 and the help windows mentioned above will automatically open at the right place to answer your question

5 Eight sample files showing how the program was used by a salesperson.. businessperson, networker athlete counselor coach student and author

6. A beautiful 165-page manual in the form of an Adobe Acrobat file that you can download with the GoalMaker software.

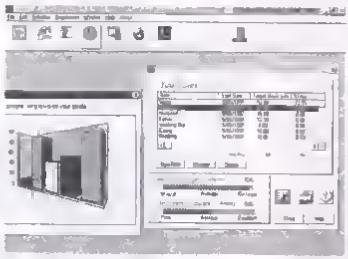
A clinical psychologist and a business/training consultant developed the program The training consultant part of the team explains the emphasis on help in the program The psychologist's input is likely to take you by surprise as you are busily working on your goals In the program, a new window will suddenly appear against a plain background and in the window a message will point out one of your goals, ask you to focus on it and then lead you through a visualization exercise

Both members of the team probably contributed to the great detail given to each goal This attention exceeds that of most of the other programs For example after creating a goal, just click on the correct tab to add as much detail as you want on the following subjects benefits obstacles strategies the reward you will give yourself, and linked short term goals Included among its many other features are graphs to show your progress and a list of your victories

One of the most valuable features is the tree view (hierarchical diagram that displays all goals sub-goals tasks and their due dates) because with just one click you can instantly view your overall plan. There's even a bar graph to display how you were feeling emotionally on any given day in a wide range of areas

Our rating: Highly recommended

MyGoals
From International Custom Software Pty. Ltd
Platform Win 95
Registration price $29.99 (price is in Australian dollars which at press time was near par with Canadian funds)



Most time aware MyGoals, another product from Australia has a unique approach based on psychological principles such as self-actualization and behavior modification Psychological studies have shown that our memory is not accurate, but biased.

We exaggerate our accomplishments and understate or ignore our errors and faults MyGoals' premise is that to continually improve, reach our goals and succeed in life we need to rely on accurate information It is not enough to think that you are working hard to carry out your goal, you need to know in precise detail how you spend your time.

When you first start working with MyGoals, you input how you think you spend every available hour during the week This may sound like an assiduous task, but it isn't because of a wizard provided by the program. With just a few mouse clicks, you can have the program enter its own data carefully selecting what most closely matches where you are today The profile doesn't have to be perfect It's just a starting point, which you can easily edit later.

Next, each evening you enter the actual time spent in all areas. Again, this may sound like much work to do, but the program simplifies the procedure and quickly leads you to completion Besides, any time spent on managing goals in this or any other program will be far less than the time you are already wasting. This may sound harsh, but after using MyGoals for three weeks you will likely be startled to learn exactly how you spend your time.

The program builds a baseline, showing where you are today compared to where you would like to be. Armed with this information you can start modifying your behavior, spending less time on wasteful actions and more time on meaningful activities

The interface is clean and elegant and the available help sufficient. Most of your work will be done at the Control Centre, where you can quickly do the following

- add new goals, milestones (sub-goals) and tasks
- edit details of goals, milestones, and tasks,
- record actual time for tasks (times for milestones and goals are updated automatically) monitor how you spend your time;
- monitor how effectively you spend your time;
- add items to the to-do list,
- add times to your personal best record
- record income and expenses,
- view graphs,
- and run reports

The graph generator is a powerful one, allowing you to produce a wide range of 2D and 3D graphs However there is no tree view for an overview of all goals at once.

Our rating Recommended

Motivator Pro
From Success Software
Platform Win 95

Continued on page 79

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CD-ROMs & Sound Cards

Toshiba 24X CD-ROM	$89.99
Toshiba 32X CD-ROM	$139.99
Panasonic 24X CD-ROM	$99.99
16Mb / 24X EIDE CD-ROM	$119.99/$75.99
Sony 2xS CD-Recorder	$449.99
16 bit / AWE 64 Sound Blaster	$55.99/$99.99
AWE 64 Gold (4 MB)	$239.99
Toshiba DVD kit	$599.99

Video Cards

MPEG 4 MB 3D EDO $59.99

matrox
Millennium II 4/8 MB VRAM $205.99 | $299.99
Mystique 200 4 MB SGRAM $159.99

3D Expression
2MB $89.99
4MB $109.99
3D Pro Turbo PCI/AV
8MB $229.99
All in Wonder
4MB $279.99
3D Expert Play $79.99

Bare Bone Systems

- Motherboard w/ 512k cache
- 16MB EDO RAM,
- 2.1 GB HDD
- 1.44MB FDD
- SVGA Window Acc.
- Digital Case,
- Keyboard

P-166	$579
MMX 166	$699
MMX 200	$729
6x86 P200+	$579
K6-166	$618
K6-200	$699

Pentium 150 $579

Video Conferencing

With Built-in TV Tuner

- Internet Video Conferencing Card
- TV Output MPEG card
- 32 MB EDO RAM
- 2 GB HDD
- Digital tower, 1.44 FDD
- Wintiki keyboard
- 24x CD-ROM
- Full Duplex PnP sound system
- Speakers
- 33.6 Fax/MODEM

Internet Video Conferencing Card
- Motion Video Capturing & Desktop video phone
- full duplex
- Includes VDO Live player
- Captures 256–16 million colors @ up to 30 frames per second
- Stereo windowed television
- TV capturing
- Digital Movie compatible w/ image editing software

$99.99 Digital Camera sold $149.99

Intel MMX 166 $899

MOTHERBOARDS w/ CPU

KLAMATH PII 233 w/ M.B.	$780.99
KLAMATH PII 300 w/ M.B.	$999.99
KLAMATH PII 300 w/ M.B.	$1,349.99
Pentium Pro 180MHz w/ M.B.	$429.99
Pentium 150 w/ M.B.	$219.99
Pentium 200 w/ M.B.	$330.99
Pentium MMX 166 w/ M.B.	$249.99
Pentium MMX 200 w/ M.B.	$369.99
Pentium MMX 233 w/ M.B.	$475.99
Cyrix 6x86 P200+ w/ M.B.	$209.99
6x86 MX PR-166 w/ M.B.	$195.99
6x86 MX PR-200 w/ M.B.	$225.99
AMD K5 166 w/ M.B.	$205.99
AMD K6-166 w/ M.B.	$259.99
AMD K6-200 w/ M.B.	$319.99
AMD K6-233 w/ M.B.	$499.99
AMD K6-266 w/ M.B.	$Call
AMD K6-300 w/ M.B.	$Call

Memory

Please call for current prices.

4MB 30 pin	$15.99
4MB 72 pin/EDO	$19.99/$13.99
8MB 72 pin/EDO	$25.99/$22.99
16MB 72 pin/EDO	$52.99/$42.99
32 MB 72 pin/EDO	$89.99/$81.99
64 MB 72 pin/EDO	$219.99/$209.99
16 MB SDRAM 10 nS	$52.99
32 MB SDRAM 10 nS	$87.99
64 MB SDRAM 10 nS	$247.99

Hard Drives

2.1/2.6 GB EIDE	$195.99/$215.99
3.2 / 4.3 GB EIDE	$229.99/$289.99
Ultra IDE < 10 mS	
2.1 / 3.2 GB WD	$235.99/$289.99
4.3 / 5.1 GB WD	$335.99/$389.99
2.1 / 3.2 GB	$235.99/$255.99
4.3 / 6.4 GB	$335.99/$439.99
7.0 / 8.4 GB	$469.99/$539.99

Hyper Technology Multimedia

- Apex P2L97 Intel 440LX chipset AGP READY (for Pentium II) LX chip: set motherboard AGP READY (for dual Pentium II) TX Chipset (for Pentium)
- 64 MB SDRAM / EDO RAM*
- 4.3 GB EIDE HDD
- ATI 3D Expression
- 105 Wintiki keyboard & mouse
- 24X CD-ROM Panasonic / Creative Labs
- Sound Blaster AWE 64
- 200 Watt speakers
- 500 CD Titles
- 56k Fax MODEM w/ Voice
- Digital tower case
- 1.44 MB FDD
- 2 Hi speed serial, 1 parallel port

Intel.	PII Klamath 233	$1,799
	PII Klamath 266	$1,899
	PII Klamath 300	$2,299
	Dual PII 266 (w/ 2 CPUs)	$2,499
	Dual PII 300 (w/ 2 CPUs)	$2,899
	MMX Pentium 166	$1,199
	MMX Pentium 200	$1,299
	MMX Pentium 233	$1,399
AMD	MMX K6 166	$1,199
	MMX K6 200	$1,299
	MMX K6 233	$1,399

Intel PII 266 $1,899

Monitor not included

Hi Technology Made Affordable

Internet Ready system w/ 17" Monitor

- 32 MB SDRAM 10 nS (6 times faster than regular) / EDO RAM*
- 3.2 GB HDD
- 1.44 MB FDD
- ATI 3D Expression
- Fax/MODEM w/ Voice
- 24x CD ROM
- Full duplex PnP sound system
- Anycable speakers
- 500 CD titles
- 17" SVGA .28 dp N.I. monitor
- Digital case
- Wintiki keyboard w/ arm rest

Intel.	*PII Klamath 233	$1,999
	*PII Klamath 300	$2,149
	*PII Klamath 366	$2,499
	MMX 166	$1,399
	MMX 200	$1,499
	MMX 233	$1,699
AMD	MMX K6 PR-166	$1,499
	MMX K6 PR-200	$1,679
	MMX K6 PR-233	$1,899
Cyrix	MX 200	$1,399

MMX 166 $1,399

*Pentium II systems come with EDO RAM only.

New Year Special

- Motherboard w/ 512k pb cache
- 2.5 GB Ultra DMA HDD
- 32 MB EDO RAM
- 1.44MB FDD
- 24x CD-ROM
- Sound Blaster by Creative Labs
- Multimedia Speakers
- Super VGA Video Graphics
- Super digital case
- Win 95 105 turbo keyboard
- Fax/MODEM w/ Voice

NORTH POLE

AMD

MMX K5-166	$579
MMX K6-200	$899
MMX K6-233	$1,099

intel.

P-150	$549
MMX 166	$679
MMX 200	$899
MMX 233	$1,099
Klamath PII 233	$1,099
Klamath PII 266	$1,399
Klamath PII 300	$1,899

Cyrix

6x86 P200+	$549
MX 166C	$618

MMX K6-200 $899

Monitor not included

Christmas Blowout

Cyrix MX 166 $699

- Motherboard W/ 512k cache
- 16 MB EDO RAM FDD
- 2.1 GB EIDE HDD
- PCI SVGA Windows acc.
- 14" SVGA .28 NI Color Monitor
- MCC Super Deluxe Tower
- 104 Wintiki Enhanced Keyboard

Pentium 150 MHz	$749
Pentium MMX 166	$799
Pentium MMX 200	$899
Pentium MMX 233	$999
Cyrix MX 166	$699
Cyrix MX 200	$759
AMD K6 200	$849

- 32x CD-ROM
- Full Duplex PnP Sound System
- Stereo Speakers
- 500 CD Titles

sold $120

- 56.6 kbps MODEM

sold $99

Windows95 $125.00

MMX Multimedia Systems

- Motherboard w/ 512k Cache
- 32 MB SDRAM 1.44MB FDD,
- 3.2 GB EIDE HDD
- 14" SVGA .28 NI Color Monitor
- S3 Virge 4 MB MPEG
- 56K Digital jumbo tower
- 24X EIDE CDROM, Speakers
- 32 bit PnP sound system
- 33.6 FAX MODEM mouse
- Wintiki KB

AMD MMX K6-200	$1,159
Pentium MMX 200	$1,299
AMD MMX K6-233	$1,319
Pentium MMX 233	$1,399

AMD MMX K6 200 $1,159

*All systems come with 1 year parts and labor warranty. Prices and product availability are subject to change without notice. Call for current prices. We are not responsible for typographical errors. 20% restocking for returns. Prices reflect a 3% cash discount. Financing is based on approved credit. All names are trademarks of respective manufacturers. **Limit right reserved per family, per office, per visit.

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(May not be exactly as illustrated)

Warranty

Powercomp Systems	5 Years(3yrs parts & 2yrs labour)
Daewoo Monitors	3 Years (parts & labour)
Other Monitors	Varies depending on brand

We will build the system as per your specification

BEST VALUE

- **Intel Pentium 166MHz** – Boxed CPU MMX
- **512k** cache M/B with **Intel TX** chipset - **QDI**
- **16 MB** EDO RAM- **(lifetime warranty)**
- **1.6 GB** hard drive 9 5ms - **Maxtor**
- **2MB PCI** - 64 bit Video card with MPEG
- 104 key win'95 keyboard - **Fujitsu**
- 1 44 floppy - **Fujitsu**
- **Logitech** mouse & pad
- **24x** CD ROM drive - **Acer**
- 16 bit stereo sound card - **Yamaha**
- Two amplified magnetically shielded speakers
- **Windows '95**-includes 2CDs and a manual
- 33 6 Voice/Fax modem - **GVC**
- 250w mini tower case - **CSA**
- **5yr warranty** - 3yr parts & 5yr labour
- 14"monitor-NI .28 dp - DAEWOO
- Change to 15"Daewoo .28dp add $99

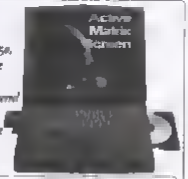
$1199 $42/m

BEST PERFORMER

- **Intel Pentium 200MHz MMX** - Boxed CPU
- **512k** cache M/B with **Intel TX** chipset - **QDI**
- **32 MB** EDO RAM- **(lifetime warranty)**
- **2.6 GB UDMA** hard drive - **Maxtor**
- **2MB ATI** 3D Expression - 64 bit Video card
- 104 key win'95 keyboard - **Fujitsu**
- 1.44 floppy - **Fujitsu**
- **Logitech** mouse & pad
- **24x** CD ROM drive - **Acer**
- SoundBlaster 16 - **Creative Lab**
- Two amplified magnetically shielded speakers
- **Windows '95**-includes 2CDs and a manual
- 33 6 Data/Fax modem - **GVC**
- 250w mini tower case - **CSA**
- **5yr warranty** - 3yr parts & 5yr labour
- 15"monitor NI .28 dp digital con- DAEWOO
- Change to 15" **Panasonic** .27 dp add $60

$1649 $55/m

DAEWOO Notebooks



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Intel **166MHz MMX 40MB** EDO, **2.1** GB HDD **12.1"** TFT SVGA, 2MB video, 10x CD-ROM, Speaker, Mic Win '95, 2 Battery FREE carrying case.
$3895 or $136/m

7550-CD3
Intel **150MHz 16MB** EDO **1.4** GB HDD **12.1"** TFT SVGA, 2MB video 10x CD-ROM, Speaker, Mic, Win '95, 1 Battery FREE carrying case
$2595 or 95/m

BEST POWER

- **Intel Pentium II 233MHz - Boxed CPU**
- 512k cache M/B with **Intel LX** chipset - **Asus**
- **32 MB SDRAM - (lifetime warranty)**
- **4.3 GB** hard drive **UDMA- Maxtor**
- 104 **Fujitsu** win'95 keyboard
- **MS** intelli-mouse & pad
- 1 44 floppy - **Fujitsu**
- 4 MB ATI 3-D Expression+
- **24x** CDROM drive - **Acer**
- Sound Blaster Awe 64 - **Creative Lab**
- Two amplified magnetically shielded spkrs
- **Multi-Media** Clip Microphone
- **56k** voice/fax modem - **Multitech**
- **Windows '95** - includes 2CDs and manual
- **Powercomp** special ATX Mid Tower Case
- **5yr warranty** - 3yr parts & 5yr labour
- 17"monitor .28 dp - DAEWOO
- Change to 17"**Panasonic** .27dp add $110

$2549 $90/m

THE DREAM MACHINE

- **Intel Pentium II - 300MHz - Boxed CPU**
- **512k** cache M/B with **Intel LX** chipset - **Asus**
- **64 MB SDRAM - (lifetime warranty)**
- **6.4 GB** hard drive 9 5ms - **Maxtor**
- 104 win 95 keyboard - **Fujitsu**
- 4MB **ATI** 3D pro turbo PC2TV
- 1 44 floppy - **Fujitsu**
- **MS** intelli mouse & pad
- **24x** CDROM drive - **Acer**
- Sound Blaster Awe 64 - **Creative Lab**
- **Altec Lansing** subwoofer & spkrs - ACS45
- **Multi-Media** Clip Microphone
- **Windows '95** - includes 2CDs and a manual
- **56k** voice/data/fax modem - **Motorola**
- **Powercomp** special ATX Mid Tower Case
- **5yr warranty** - 3yr parts & 5yr labour
- 17" monitor .26 dp, 1600x1200 - DAEWOO
- Change to 17"**Panasonic** .25dp add $199

$3599 $127/m

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• Upgrade 32mb EDO to SDRAM	$ 19	• HP Deskjet 670C printer	$299	• MS Office-Pro 97 w/manual	$349
• Upgrade to MS Natural KB	$ 65	• Epson 600 color printer	$379	• Corel-WP Suite 8 w/manual	$139
• Upgrade to USR Modem	call	• Lexmark 1000 color printer	$199	• Lotus Smart Suite '97	$ 45
• Upgrade to ASUS M/Bs	call	• Okidata 600dpi Laser printer	$ 25	• MS home bundle '98	$ 89
• Upgrade to other monitors	call	• 4800 dpi 30bit flat scanner	$175	• Crampton's encyclopedia '98	$ 29

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- **Matching Cases & Speakers** - Now we have our own exclusive cases with matching speakers. These are top of the line sturdy steel cases. Speakers are fully amplified with true stereo quality sound and they are uniquely designed matching with the cases.
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- **Windows 95** - Be aware of pirated and counterfeit copies. We buy only from MS authorized distributors. New genuine Windows 95 come with **2 CDs and a manual**. Anybody trying to sell in 1 Cd or without manual - you should report it to MS anti piracy hotline 1-800-785-3448.
- **RAM memory** - We use all brand name original memory modules with **lifetime warranty**.e.g. Siemens, Hitachi Fujitsu, Goldstar, TI etc.
- **Volume** -Powercomp is a volume dealer. The number of computers we sell in a week most of our competition will not be able to sell in a year.

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Small Business Computing

Eight paths to success
Continued from page 76
Price $79.95 (CD vers on) $59.95 (downloaded version)

Most intelligent. This program, from Calgary-based Success Software introduced the world to goal setting software Since it has the longest track record, it s hardly surprising that it's exceptionally advanced Although other goal setting programs allow you to view your plans and progress, only Motivator Pro turns the table around and mon itors you This feature more than any other is what separates It from the others and makes it so effective

When you begin using the program, tl scans your goals and tasks and If it finds anything overdue it demands to know what you are going to do about It That is, are you going to extend the deadline (if so to what date) are you going to delete the goal..or did you com plete the goal but forget to check It off as done? When asked to do so, Motivator Pro will display your progress in the form of graphs alerting you to problem areas If you keep extending or deleting goals and tasks, don't expect a favorable review from the program which watches you every move and remembers everything you do

When working on my career goals it suddenly occurred to me that I should do more networking by joining additional associations and attending more business meetings So, before forgetting, I quickly added a new goal called "networking " Not yet sure which associations I would be joining or meetings I would be attending I did not attach any tasks to the "networking" goal After all I could always do that later While working in the program a couple of days later I asked the built-in "Goal Coach" to check my goals It immediately reported that I had not added any tasks to my "networking" goal and suggested that I do so In other words Motivator Pro won't allow you to forget anything It's always on your back, nagging you, prodding you forward It s a stern taskmaster determined to make you succeed but if you can't take the heat you better look elsewhere!

Among the eight programs only three have a tree view Motivator Pro s is the best by far On a single screen you can view all your goals deadlines and their relationships You can right click on a goal and instantly edit it. And it is just as easy to add new goals or delete deadweight. The program also comes with both a scratch pad and daily journal. The daily journal has a powerful search tool which will find what you're looking for in a flash The scratch pad is just for jotting down notes on the fly which at a later date can be converted to goals, tasks, or other elements with a single mouse click.

Packed with other features as well Motivator Pro is easy to use, powerful and effective In a word, It is a goal setting program that is impossible to ignore

Our rating Highly Recommended

LifePlanner
From Mind Tools Ltd
Platform Win 3 1/95
Price US$30

Most links Deceptively modest in appearance LifePlanner is a heavyweight contender that's easy to use. What makes it so unique is the number of links It offers, more than any of the other programs reviewed here. You can link any of the following goals notes, contacts, bit map and vector Images, sound and video clips, as well as word processing, spreadsheet and other documents Links with contacts is possible through the built-in contact manager. Only three of the eight programs reviewed here have contact managers, and the other two are either five or eight times more expensive!

Of the six programs available for down loading, this is the only one that does not need a registration code to keep functioning. The other five programs will quit working after 30 days if you fail to register. However LifePlan, like the Eveready battery will keep on going Of course every time you start the program there will be a friendly reminder urging you to register (and we always encourage you to register shareware) Since the purpose of the program is to change your life for the better, it makes sense to begin now by taking responsibility and registering. After all US$30 is a minuscule sum to pay for achieving success!

When you begin to work in LifePlan, you set up your lifetime goals followed by your 25-year five-year one-year, six-month and one-month plans The work involved Is simple..as you are guided each step of the way by wizards help screens, and online help

As you add tasks to your goals they are automatically moved to your to-do list (action plan) at the appropriate dates The program will even send automatic reminders to your task list, telling you that it is time to review your six months plan for example Moreover, every time you check off a task as done, it is moved to the achievements list There's nothing like viewing your accomplishments for motivation

LifePlan may not offer a tree view but its many links and contact manager more than compensate for anything it lacks which is little.

Our rating Highly recommended

Continued on page 86

Boxing Week Special

Much More In Store

32MB SDRAM 10ns.....$95
15" NI, LR .28 SVGA Monitor.....$249
Fujitsu 3.5GB UDMA Hard Drive.....$245

Season's Greetings

MERRY CHRISTMAS

Printers

Canon BJC 240 4300	$189/289
Lexmark 1000/7000	$169/499
Epson 400/600 1440dpi	$279/359
Epson Stylus Photo	**$629**
HP DeskJet 670C/820C	**$285/359**
HP DeskJet 692C/722C	$359/459
HP DeskJet 870C/890C	$529/599
HP OfficeJet 300/350	$579/619
H. OfficeJet Pro 1150C	$1329

Laser

Brother HL720	$329
Brother HL750DX+ w/ Internet	$439*
Brother HL760DX	$519*
HP 6L 600dpi 6ppm	$529
HP LaserJet 6P/6MP	$989/1269
Lexmark Ex 2M 6ppm	$539

Fax Modems

Zoltrix 33 6/56K Voice/Fax	$65/109
Acer 33 6/56K Voice/Fax	$69/109
Motorola 56K Fax/Voice	$129/139
USR 33.6/56K Voice/Fax	$129/179
Motorola 56K Ext Fax/Voice	$169/189
USR 56K Ext. Fax (Box)	**$259**
Cardinal Int. ISDN Modem	**$269**
USR Megahertzz 56K PC Card	$299

US Robotics

Drives

1.3G / 1.7G	$169/189
Quantum 2 1/3 2G ST	$239/299
Quantum 4 3/6 4G ST	$359/479
WD 3 2/4 3/5 1G	$289/349/479
Maxtor 2 5/3 2/4 3G	$249/269/349
Maxtor 5.2/7 1/8.4G	$419/499/599
SCSI	
QT 3 2/4 3/6 4G ST	**$429/479/659**
IBM UltraStar ES2 2 16G UW	$479
QT Atlas II 2.2/4 5G UW	$479/799
Barracuda 4 5/9 1G UW	$879/1269
Cheetah 4 5/9 1G UW	**$969/1539**
(10 036 rpm - 7.5ms AV Drive)	
Panasonic 1 44 Floppy	$28
IOmega Zip100 IDE	$139
LS120 Super Floppy	$169
Ditto 2 0/3.2G TapeDrive	$189/269

SCANNER

Acer 300F / 610+ 1200dpi	$239/339
Microtek E3/E6	$199/399
UMAX 610P/610S	$199/229
HP ScanJet 5P/6100	$379/969

CD-DVD & Sound

Mitsumi 6X / BTC 24X	$69/89
Panasonic / Toshiba 24X CD/RDM	**$99/115**
Pioneer/Sony12X/24X Int. SCSI	$139/179
Plexter 20X Int/Ext SCSI	$289/399
Creative Encore DVD Kit	$469
Diamond Maximum DVD 2000 Kit	$449
Toshiba DVD Multimedia Kit	$489
Mitsumi 6x2 IDE CDWriter Kit	$519
HP 7100i Re-Writable CD IDE	$539
Sony 928 8x2 IDE CDWriter	$449
Yamaha 400i 6x4 CDWriter	$659
Yamaha 4001 IDE Rewritable CD	$899
Memorex / TDK CDR Disk	**$4 / $5**
16bit 3D PnP Sound Card	$23
Acer 3DEX/AW35 Pro Wavetable	$27 / 49
Sound Blaster 16 PnP	$55
Sound Blaster AWE64 / Gold 4M	**$95 / 249**
80/320W Multimedia Speaker	$20/$49
YAMAHA M15/M20/Subwoofer	**$89/129/115**
Altec Lansing ACS45 w/ Subwoofer	$129
Altec Lansing ACS48 PowerCube	$199

Monitor & Video

64 bit SVGA 1M w/ MPEG	$29
S3 3D Virge 4M EDO	**$69**
ATI Mach64 w/ MPEG	$75
ATI 3D Xpression 2M	$69
ATI 3D Plus/TV 4M SGRAM	$89/109
ATI 3D Pro Turbo PC2TV 4/8M	**$189/239**
ATI All In-Wonder 4M	**$289**
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Monster 3Dfx Voodoo 4M EDO	$223
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ATI Xpert@Work / @Play 4M AGP	**$219/239**
ASUS 3D-Explorer 3000 4M AGP	$199
TekRam How-R-U Video Cancer	**$239**
Daytek 1436/15" 1531 .28 Digital	$219/289
Proview/Voxon 14" /15" .28 Digital	$189/289
Sceptre 15" P531	$349
NEC 15" A500 28/E500 25	$479/529
SONY 15" 100SX/SF 25	$519/549
Acer 17" 76e/76c/78e .26 1600	$579/649/689
Goldstar 17" 7D/78D 25 1600	$659/799
NEC A700/E700 25 Multisync	$779/919
Panasonic 17" S70/P70/P70	$749/899 1199
Sceptre 17" P73A/P75A 26 1600	$639/699
SONY 17" 200SX/SF .25	$879 1039
Viewsonic Optiquest 17" V773/775 .26	$699/749
Viewsonic 17" G773 26/P775	$789/889
Viewsonic 17" **PT775/19" V95**	$999/1299

CPU & RAM

Pentium 150/166/200	$149/189/279
PI 66/200/233 MMX	$179/299/399
Cyrix 6x86MX 166/200	$149/189
AMD K6 166/200/233	**$179/259/439**
Pentium II 233/266/300	**$589/759/1099**
8M / 16M EDO 72pin (60ns)	**$35/57**
32M / 64M EDO 72pin (60ns)	**$199/369**
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Managing those contacts

Continued from page 71

program allows multiple users to access the database each in his or her own way The customizable views allow everything from contact history and company information to object links with OLE 2.0

Making a call or writing a letter, sending a fax or booking a meeting is easy, as is tracking the time spent on the phone setting alarms and emailing The program has integrated right-click options

Maximizer maintains its strengths from its previous version. These include features such as the MultiActive Eagle Internet database the Internet Email merge capability and Xpedite fax re-broadcast MultiActive Eagle is an Internet database of over 11 million businesses in the United States and Canada that only Maximizer customers can access Using the software and any Web browser Maximizer 97is customers can visit the Eagle site and download contact information This is a limited offer for access to a few dozen contacts for the purposes of evaluating the service Internet Email merge is a built-in feature of Maximizer 97is that allows the program to send mass emailings

Xpedite Faxing is a fax rebroadcast service Xpedite uses a worldwide network of phone servers to send the fax electronically to the area of the telephone number and then fax locally if possible However, the 97is version of Maximizer improves upon earlier versions with improved scheduling Users can now send email with an RSVP, which allows for "yes" "no" "tentative," or "ignore" responses.

There are add-ons, such as Business Map LTF a limited version included in the box that will present geographical information visually by placing it on Canadian and American maps. There is also a Java edition of the product built primarily for intranets where a variety of different computer platforms may need to be supported This is a great move for Maximizer, and its parent company MultiActive and one that we hope pays off

The box includes a coupon for a free pager when you sign up for a year's service The benefit here is the ability to have Maximizer call your pager if needed Overall, this is a program that combines versatility and simplicity Maximizer 97is is an excellent contact manager

The company also offers Maximizer CELink software to synchronize handheld computers using Mircosoft's Windows CE operating system with its desktop contact manager It is also beta testing Pocket Maximizer a full-powered contact management package for Windows CE devices and is developing a version for Windows CE 2.0

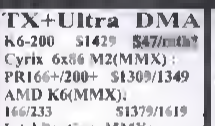
Act! Version 3 0

From Symantec Corporation
Suggested Retail Price $249

This program is one of the most popular contact managers in North America and it is easy to see why Act! 3 0 for Windows 3.x 95 or NT has the best of features including Internet support and improved calendar integration

ACT! has an intuitive, completely customizable interface It is a form-based contact manager which has a clean, minimalist look. The elegant forms are customizable but also come with a number of pre-defined templates Expected abilities such as monitoring telephone calls and placing a contact's name and

Continued on page 91



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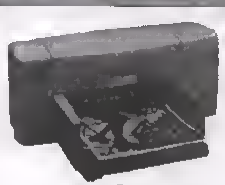

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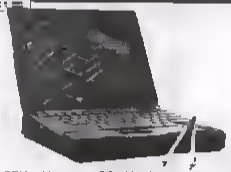
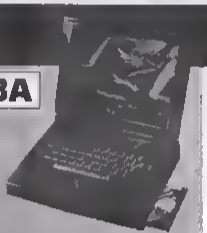
NoteBooks

IBM



Model	CPU	Memory	HDD	CDROM	Display	PRICE
TP 380D	150MMX	16 MB	2.1G	N/A	12.1 TFT	$2,469
TP 380ED	166MMX	16 MB	2.1G	20X	12.1 DSTN	$3,169
TP 380ED	166MMX	16 MB	3.0G	20X	12.1 TFT	$4,550
TP 560E	166	16 MB	2.1G	N/A	12.1 TFT	$4,499
TP 760XD	166MMX	32 MB	3.0G	8X	12.1 TFT	$5,399
TP 770	200MMX	32 MB	3.2G	N/A	13.3 TFT	$6,199
TP 770	233MMX	32 MB	5.1G	N/A	14.1 TFT	$8,599

TOSHIBA



Model	CPU	Memory	HDD	CDROM	Display	PRICE
440CDX	133MMX	16MB	1.3GB	10X	12.1DSTN	$2,549
440CDT	133MMX	16MB	1.3GB	10X	12.1TFT	$3,349
460CDT	166MMX	32MB	2.0GB	10X	12.1TFT	$4,349
520CDT	166MMX	32MB	2.1G	10X	12.1TFT	$4,995
530CDT	166MMX	32MB	2.1G	10X	12.1TFT	$5,290
740CDT	166MMX	16MB	3.0G	10X	12.1TFT	$6,799
750DVD	233MMX	32MB	5.1G	10X	12.1TFT	$7,995

HITACHI

Model	CPU	Memory	HDD	CDROM	Display	PRICE
VB Plus	133MMX	16MB	1.4GB	10X	12.1DSTN	$2,349
VB Pro	133MMX	16MB	1.4GB	10X	12.1TFT	$2,899
VB Plus	150MMX	16MB	1.4GB	10X	12.1DSTN	$3,195
VB Plus	166MMX	16MB	2.1GB	10X	12.1TFT	$3,449
VB Pro	166MMX	32MB	2.1GB	10X	12.1TFT	$4,599
VB Pro	166MMX	32MB	3.0GB	10X	13.1TFT	$5,749
VB Elite	166MMX	16MB	2.1GB	10X	13.1TFT	$5,499

All advertised prices reflect cash discount. 2 years parts and labor depot warranty on all systems. All prices are subject to change without notice. All items are based on availability. Not responsible for typos.

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AMD K6-200 MMX	$435
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Built-in EIDE Controller, 2S/1P
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17" Non-Int. SVGA Monitor,
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Free Mavis Teachers Typing
Free US & World Atlas
Free Mouse & Pad

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Sound Blaster AWE 64 PnP Sound Card
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CANON BJC4300 Color Printer	$259
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USR 56 6 Int Voice/Fax Modem	$155
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- 1 year warranty

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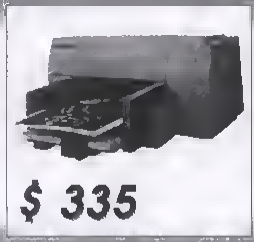
- 1 year warranty



$ 335

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Acerview 14" 34T .28mm	$229
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Acerview 17" 76e, .28mm	$575
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USR 33 6 Int. Voice	$125
USR 56 6 Int. Voice	$185
Motorola 36 6 ext Voice	$169
Motorola 56 6 Int Fax	$135

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Canon 4300 Color	$259
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HP 722 Color Inkjet	$479
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HP 890C Color Inkjet	$599
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HP 5 ColorLaser printer	$5590
HP 5N Color Laser	$8999
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Epson Stylus 600	$349
Epson Stylus 800	$505

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ATI 3DXpression 2mb	$70
ATI 3DXpression 4mb	$99
ATI 3D ProTurbo, 4mb	$179
ATI 3D ProTurbo 8mb	$239
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ATI Xpert@work AGP 4mb	$245
ATI Xpert@play AGP, 4mb	$275
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MGA Millenium II, 4m	$235

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Jazz Drive Int. SCSI,1GB	$365
Jazz Drive Ext. SCSI,1GB	$515
Zip Disk 100 MB x 1	$18
Jazz Disk 1 GB x 1	$199

Small Business Computing

Eight paths to success

Continued from page 79

The Secrets of Mastering Your Destiny

From Faithfinder Software
Platform Win 3 1/95
Price US$39 95 + US$4 95 shipping
(saves US$4 95 if you receive your key by email)

Most New Age Part of New Age thought or pop psychology claims visualization of success mantra style repetition of positive affirmations or longingly gazing at a photograph of a desired object will lead you to gaining that object Or to quote directly the creator of this program (which I will refer to as Destiny) "The process of attracting wealth or really anything to you is through making a picture of a thought pattern of what it is you truly want By flashing your goals along with a picture on the screen periodically you will be imprinting the images in your Unconscious Mind This will begin the process of attraction " If you are of like mind this may be the program for you

However the shortest road to success is action. By action, I don't mean sitting in a dimly lit room visualizing, but planning and completing tasks that bring you closer to your goal There are others who feel the same way For example the programs of two of the giants in the success industry, Zig Ziglar and Tony Robbins, stress task-oriented deeds. Their programs offer little in the way of voodoo and much in the way of planning and action —

Returning to Destiny it is composed of two parts, a goal setting program and a scheduled events manager The goal setting program is disappointing as you cannot link goals with other goals tasks, or personal notes Tasks are not automatically transferred from goals to a to-do list, but must be manually entered or copied and pasted. Also each time you start the program you must type in a password and ID (everyone receives the same password and ID) Because of this and other limitations I cannot recommend this program for goal setting

On the other hand, you may find the scheduled events manager interesting or useful. It allows you to flash in a separate window on the screen a message goal, task or affirmation You can also attach a bit map, sound (.wav) file, or launch a program You can control the time of day and number of times the message will appear

The best part is the scheduled events manager is an independent program You can have it automatically load with windows so the messages appear while you work in other programs, and Destiny needn't be loaded because you may find this component of Destiny useful

Our rating: Recommended with reservations

Goal Setting Made Easy

From Blanch Software
Platform Win 3 1/95
Price US$49 95

Easiest to use Goal Setting Made Easy lives up to its name To set your goals, all you do is dial in your choice of goal from the list provided Can't find what you're interested in? Just double click on any list box and type in your own text however you will have to keep your descriptions brief Here's an example.

Main goal asset goal **Goal type** family
List goal car **Sub-goal** luxury car
Goal element Mercedes
Goal reason personal achievement
Year 1998 **Month** February **Day** 10
With wife
Calculation down payment $5 500
Asset value $50 500 **Amount financed** $45 000
Rate 4% **Number of years** 5
Monthly payment (automatically calculated) $704 03

As you can see the program is limited. Once you dial in your choices, the program merely displays them one goal at a time There is no goal management done in the computer You can, however, print various reports and forms that you can use to manage your goals. Why am I bothering to report on a program that is this restricted? For two reasons.

The most limited goal setting program is far better than none at all If some people feel goal setting programs involve too much work they can always use this one Limited as it is, at least it will get people thinking about their goals. However the most important reason is our children. The earlier they learn about goal setting, the better. Imagine, you may have an enormous impact on your children's future by introducing them to this program When they grow old enough, they can graduate to one of the other, more fully featured goal setting programs.

Our rating: Recommended with reservations

Continued on page 89

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P-133	$1088
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TOSHIBA 430CDT P120 CD----------$3428
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Asus P II P2L97/P2L97-S ATX---- $259/$346
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ABIT IT5H HX/PX5 TX ----------$175/$179

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Pentium 233 MMX ---- $380
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AMD K6 166/200/233 MMX --$186/$245/$460

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Viewsonic17 GT770/PT770 0.25----$890/$980
Viewsonic21" G810/P810 0.25------$1850/$1950
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Optiquest 17" V775/V773 0.26 -------$804/$709
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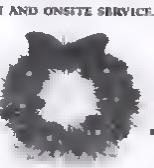

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HP Deskjet 820Cxi/870C ----------$339/$529
Epson Stylus 400/600---- ---- ----$275/$375
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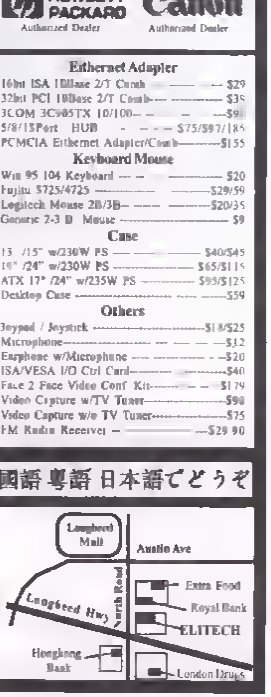

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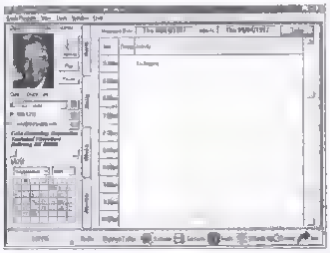
Small Business Computing

Eight paths to success
Continued from page 86

Zig Ziglar's Success Planner with Goals Management
From Echo Consulting Corporation
Platform Win 95/NT
Price US$149



Most convenient: Most sales managers and sales reps have heard of Zig Ziglar the goal oriented individual who rocketed to the top and became the multimillionaire success guru he is today Many have read and still cherish Ziglar s book, *See You at the Top* Now, they'll probably want to use Ziglar's Success Planner with Goals Management, and with good reason

Until recently, personal information managers (PIMs) were weak in goal setting and, conversely goal setting programs were weak in personal information management Ideally, we would be able to combine both areas into a single program and remove the need for entering some of the same data into two separate programs That's what Ziglar's program strives to do and it is successful It may not have the power of some of the standalone PIMs but it is a complete contact manager appointment scheduler, and goal setter.

The program interface is intuitive and a pleasure to work with Success Planner comes on a CD which is jam packed with over six hours of audio clips of Zig discussing every thing you wanted to know about goals

When setting up a goal Zig s seven step process forces you to consider benefits obstacles, resources and requirements before indicating your plan of action Also this program is one of the three out of the eight reviewed that does provide a tree view of your goals. Just click on the Goals button to get an instant snapshot of your entire plan

One of the many features you will like in this program is the balance check Assuming you have entered goals in all six of his categories (career physical mental family personal spiritual) the program will check your goals and show in a graph how balanced you are for example you may be spending too much time on your career and not enough on your family As either a goal setter or a PIM this program is recommended however as a combination of the two, it is highly recommended

Our rating: Highly recommended

Anthony Robbins' O.P.A. Life Planner
From The Anthony Robbins Companies
Platform Win 95/NT Macintosh
Price US$245

Most comprehensive planner: Like Ziglar s Success Planner Tony Robbins O P A Life Planner is both a PIM and a goal setting program. The most comprehensive of the eight programs, it packs the power to create goal plans and projects of huge complexity and minute detail It can even export project files to Microsoft Project.

Features include a notepad, daily journal, powerful search tool, contact manager the most beautiful interface of all eight programs, a special area to focus on continuous improvement (what the Japanese call Kaizen and Robbins calls CANI, an acronym for continuous and never-ending improvement), and daily, weekly project, and communication planners.

The differences between Robbins and Ziglar's programs go well beyond the $96 higher price tag for the O P A. Life Planner Ziglar straightforwardly calls his program a success planner with goals management. You immediately know what he s talking about. The program itself is intuitive and loaded with help It's obvious that it was designed for the average sales or goal driven person

Compare the above with Robbins' approach Right from the start, you're confused What is an O P A. Life Planner you wonder? Well O P A stands for Outcome-focused, Purpose-driven Action Plan. Since Robbins calls goals "outcomes," "outcome-focused" simply means goal oriented As soon as you start working in the program you realize that it is not intuitive but will need some getting used to Ziglar designed his program for the average person while Robbins may have designed his for himself

As the leader of a vast empire Robbins is used to developing mammoth plans and projects that need sophisticated tools, and his O P A Life Planner has the capacity to deliver So if you are a power user not alarmed by slightly steeper learning curves, this could be the program for you Who knows, you could become the next Tony Robbins!

Our rating: Recommended

Conclusion

Do you know what today is? It could be the most important day of your life! After all, today you have learned about goal setting programs and where to get them. In a few days like Joey you could be embarking on an exciting journey Good luck!

Chuck Gallozzi is a Mississauga based freelance writer who has written extensively on sales motivation and photography His other areas of interest include computer software the Internet, and spirituality

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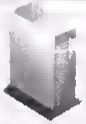

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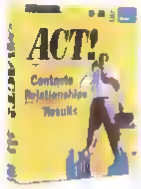
Managing those contacts

Continued from page 82

address automatically at the top of a letter are present as well as the more advanced features such as support for caller-ID and the option to use your Microsoft Word or WordPerfect word processor for letters



Act! 3.0 supports Novell Netware version 3.12 and later, Microsoft Windows Network, and NT version 3.51 and later. Like its peers this program supports a number of different paper-based organizer print-out formats and a decent number of import and export formats

There are three levels of security that can be set in this program and it is possible to assign contacts to groups and even assign files to those groups. Act! supports popular Web browsers and uses your email program allowing you to directly email groups or individuals without leaving the program. The selection of standard reports has been improved by the addition of a graphical report designer and the dialer now supports Microsoft TAPI interface

For automatic download of any new patches or upgrades to the software, Act! has a button on the toolbar that will take you to its Web page. Suffice to say Act! 3.0 is a good upgrade to a good program. For a solid contact manager with a large installed base of users, consider Act!

GoldMine 3.2 for Windows 95/NT 4

From GoldMine Software Corporation

Suggested retail price: $349

In the past year GoldMine Software has focused its attention on supporting GoldMine 3.2 with back-end products to make the Contact Manager an enterprise solution. Those products are called GoldMine 4.0 and are identical to the previous version in interface and user functionality. This overview simply looks at the standard product

GoldMine for Windows 95 is a 32-bit program that has been around for about a year in its most recent incarnation. The tab style presentation of the forms is simple and effective. Rather than simply print "calls" or "appointments" the tabs have a small icon beside each name. Like Maximizer, GoldMine makes good use of the right-click functions with pop-up menus and Go To actions. The calendar in GoldMine offers all the important features: multiple views, alarms, drag and drop recurring events and above all, tight integration with workgroup scheduling

GoldMine has email support and telemarketing scripts, as well as sales analysis and graph tools. Reports can be generated in a number of ways, including an automated process which may help you avoid repetitive steps. There are to-do lists and call monitoring as well as the ability to link OLE files to contacts.

GoldMine is forging ahead in the palmtop area as well with support for Microsoft CE. GoldMine seamlessly imports Act files and has a slew of other features. Overall GoldMine is a great program, and now with support for SQL databases such as Microsoft SQL 6.5 Server, it is truly powerful

Janna Contact Professional

From Janna Systems Inc

Suggested Retail Price: $149

Janna Contact Professional is a very slick contact management program that is professionally designed and presented. This 32-bit program uses a Microsoft Access database engine and is highly integrated with Microsoft Office. In fact, the program was one of a very few in both the PIM and CM categories that imported Outlook 97 information, albeit with one small error (re-occurring alarms kept re-occurring forever)

The program will run on NT or Win 95 and use Netscape Navigator or Internet Explorer without a problem. The program is an excellent container for OLE objects, which means drag and drop works well. If you want a picture beside each contact, just drag it onto the contact's Notes section and let it go

Janna Contact Professional is flexible with Internet Explorer 4.0 style toolbars. Icons are customizable and tabs are used where appropriate. There is something about the interface that is just plain nice to look at. This aesthetic does not diminish the program's capabilities. This is a full-featured CM product with functions like Task Delegation, folder support and Web links. Janna's philosophy is to use Microsoft Office-style conventions and look and integrate with Office as much as possible

Numerous other features include multi-user group scheduling, Quick Pick drop downs and intelligent use of right-click options. This is a under-recognized product that will likely continue to receive good reviews. There is nothing unusual about most of the features found here but they are cleanly put together in a way at once elegant and productive. A good choice for your contact management needs.

TeleMagic Professional 2.1 for Windows

From TeleMagic Inc

Suggested retail price: $139

TeleMagic for Windows is a Windows version of an earlier DOS product which was one of the pioneers in this software category. The sales-oriented contact manager uses a contact database to offer features such as a calendar, phone lists, scheduling

Continued on page 98

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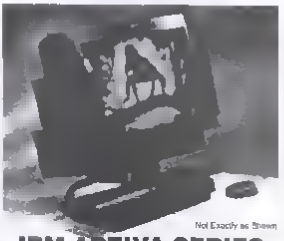

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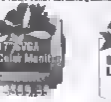

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Small Business Computing

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You work hard to make money and want to make sure you don't lose it. As you may have noticed over time various banks trust companies credit unions and insurance companies have gone under in Canada. So it is important to know

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These are covered by an industry operated protection plan called CompCorp up to certain limits and in certain situations, depending on the nature of the investment. The limit for policies registered under the Income Tax Act such as RRSPs RRIFs and pension policies is $60 000. The limit is also $60 000 for non-registered policies such as cash value of life insurance policy. For information and confirmation, contact CompCorp directly at 800-268 8099.

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For further information and confirmation, contact your broker or the CIPF office in Toronto at 416-866-8366.

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For further information and confirmation contact CompCorp at 800-268-8099. □

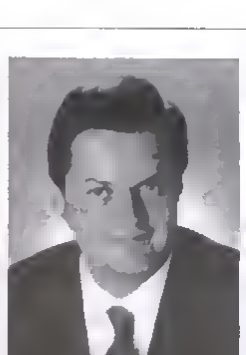
Douglas Gray LL.B. formerly a practicing lawyer is a Vancouver-based speaker consultant and author of 15 bestselling books including The Complete Canadian Small Business Guide and Home Inc. The Canadian Home Bases Business Guide (McGraw Hill Ryerson) and Start and Run a Profitable Consulting Business and Marketing Your Product (Self-Counsel Press).

Small Business Computing

Small business is big for Microsoft

New Canadian GM takes reigns of growing subsidiary

In September 1997, Simon Witts joined Microsoft Canada as its new general manager. Before coming to Canada, Mr. Witts was director of the enterprise customer unit with Microsoft U.K., which he joined in 1993. TCP editor, David Tanaka, met with Mr. Witts in October. Following are excerpts from that conversation.



Simon Witts

TCP: You are relatively new to Microsoft Canada, but not to Microsoft. Can you give us a road map of where you see Microsoft Canada going in 1998?

SW: By Microsoft Canada, what we would mean is three elements of it: ourselves in marketing, the Microsoft Network in Canada, and Softimage which still has 330 people in Canada. But I'll focus on the sales and marketing and subsidiary aspects, which is around 350 people.

We've grown the subsidiary in the last three years. It's doubled in revenue, and we see that momentum continuing. So it's still a growth mode for us, fuelled mainly around the fact that the fiscal year that we're in—July to June—we'll be shipping over half the server operating systems in Canada with NT Server. So that is fuelling growth at much faster rates, and that adds up to subsidiary growth of doubling revenue in the next three years.

We pretty much focus things in the Canadian subsidiary that are unique to Canada. So, for example, we have a big mandate to localize product—certainly for the French Canadian market. We have a real mandate to localize products like IE4 [Microsoft's Web browser: Internet Explorer 4.0], for example. It's quite ironic that as you get content in your products like IE, having that local content in terms of Active Channels or Internet service providers is a big role of the subsidiary.

If you want to look at it in a business context, we're trying to both take the product set into the small business arena and into the large enterprise arena. We're excited by the number of small businesses in Canada. Now we've got an appropriate product set, and that also will fuel the growth.

In Canada, we look at this small business market as one to 50 PCs. The important points in that taxonomy would include the SOHO—the home office that could be a home PC being used by a self-employed person. We see that entire customer base as being bout three million customers in Canada. Ironically, about two million of those have under five PCs, but importantly one million have between five and 49 PCs. So it's a proportionately big opportunity for Microsoft in Canada.

On the server side, tomorrow we launch the small business server (in late October. Microsoft announced BackOffice Small Business Server) which is a full implementation of BackOffice that's been simplified. It includes other features such as fax, Internet access. You can genuinely open up the product, get an installation wizard going, and with

Small Business Computing

no IT [information technology] skills configure the Backoffice Server in a small business environment

TCP: That's a rather provocative statement—no IT skills

SW: The important thing in our analysis is that certainly in [businesses with] under five PCs there's no formal technical skills on site. The owner/manager may be very technically competent and in that sense I'm not trying to underplay the benefit of having technical skills. But the important thing is that we're assuming that the value-added provider can deliver that.

And certainly the ongoing administration and user management does not require IT skills at all. We've taken a lot of the Intellisense technology and if you look at the Wizard and how few questions its actually asking you. It's a very very intelligent way to customize the server environment for a small business scenario.

TCP: Can we jump ahead to NT 5 and Windows 98. What strategy would you advise to businesses for selecting Windows 98 or NT 5 Workstation as a business desktop operating system?

SW: I think the first point to make now is that both operating systems are some ways off. Part of the slippage of Windows 98 is definitely around the feedback we've had that Windows 16-bit users need to have a smooth migration to get there.

We've previously committed and are following through on the fact it will be as straightforward to move from NT 4 as it will be from Windows 9x to NT 5. So the most important point is don't delay going to 32-bit Windows today.

If we go forward a year and you're a 32-bit Windows user, I think it will be a lot simpler a year from now. NT 5 will be a complete superset of Windows 98. Period. So in that sense—application support, things like Plug and Play, the ability to use either OS in a mobile environment—it is a genuine statement to say that NT 5 is a superset of Windows 98.

So it's all come down to do you want some of the advantages that will be associated with NT 5 that will come with a hardware cost or in some sense for some users, at a complexity cost? And what I would point to there with NT 5 is the fact that all of what we talk about, having the option to configure a client and not visit it again in terms of having zero administration at a client level, will be achieved through NT 5 only.

There's only so much we can do with Windows 98—In the large managed corporate environment, we would be recommending NT 5 on the desktop if that is appropriate in hardware terms.

TCP: Microsoft has been talking about Simply Interactive PC, and manageability issues for more than a year now. Is that to say that those will finally be realized in NT 5 and not Windows 98?

SW: No, that's not a true statement. In fact the Simply Interactive PC and Always On were talked about in the PDC (Professional Developer's Conference) in November '95. We see already that people are taking the further definitions. There's a lot you can do with hardware in terms of getting the cost down as well.

So no, many aspects—certainly Always On, certainly the ability to remote boot and close down the chassis, have an external bus—are features within Windows 98 as well.

TCP: Microsoft has been working with Intel on the PC 98 Spec. Will what's being defined there also be supported within Windows 98?

SW: There'll be some different hardware reference designs that only NT 5 will take advantage of. And that actually does come down to the choice.

One of the things we're trying to achieve with Windows is choice: whether it's cost based users or device types, and there will be some specifications unique to NT 5 in that regard, certainly around the Windows Terminal for example.

TCP: So what are some of the criteria that people will use to make the choice between Windows 98 and NT 5. Is it a matter of power, is it a matter of manageability or is it a matter of legacy 16-bit applications?

SW: I don't think it will be associated with legacy applications or device support any more. In that sense it's a true superset. There won't be degradation of function associated with NT5 versus Windows 98.

You've got to look at the upsides and say "is that something I need for my enterprise or my small business?" And those upsides are definitely associated with manageability. We will deliver the lowest cost scenario with an NT client versus a Windows 98 client. That cost is also associated with user management as well as software management in terms of the directory support at the client level. Also in security terms, we will be putting in NT 5 the ability to have a single security model across the enterprise for large customers.

We will charge a premium price for NT for these reasons. So it's "do I want the benefits associated with NT 5 vs. what will I lose." No one need to stay with Windows 98 is the key point.

TCP: Would there be any advantages for an end user, say in a home, adopting NT 5 versus Windows 98

SW: Yeah there could be. Certainly power usage. Many of the features we're talking about within Windows 98, like the broadcast PC architecture, being able to support the rich Internet integration aspects—all of that is going to be in NT 5, so it's the same question. There are no reasons why they wouldn't. There might be reasons why they would.

TCP: I read a review recently of a beta of Microsoft Office for the Macintosh and the reviewer said that this was a really great product. Microsoft recently invested some money in Apple as well. So what is going on with your strategy with the Macintosh platform?

SW: People don't quite realize that we actually make on average more dollars per Mac than we do from a PC. We enjoy a very high market share of applications on the Mac. So two of the reasons behind that investment were to ensure we've committed not just this release of Office but future releases of Office through to the next millennium.

But it's also important for us if you understand Office 97, is the integration of the Web. It's the same philosophy. To bring the best of the Web and the best of the PC. Having IE 4 integrated to the Mac desktop is an important aspect of Office users being able to get true value out of Office on the Mac.

So that investment made sense to us to get payback and to continue to serve Mac customers with office. Fins also to ensure the the cross-platform commitment of IE, especially IE for an Office97 user. ❑

Small Business Computing

Suite PIMS: MS Outlook vs. CorelCentral

Just released is the final component of Corel's WordPerfect Suite 8 Professional. CorelCentral 8 is the contact manager/email program that completes the suite and allows it to directly challenge Microsoft Office 97.

BY ROD LAMIRAND

The emphasis of contact managers is the database. These programs start with a contact list and then build functions around them. Office productivity suites have evolved by integrating separate programs such as a word processor spreadsheet database and presentation package. With network related tasks such as email, becoming more common and more important, the natural evolution was to bring a final component into the suite to unify and consolidate.

That component is the communications centre. In Microsoft Office 97 that component is called Outlook. In Corel WordPerfect Suite 8 it is called CorelCentral. These products make office productivity suites competitive with contact managers while maintaining tight integration with very powerful and popular programs like Word Excel WordPerfect or Quattro Pro. Both Outlook and Central can only be purchased as part of a suite. Both programs require Windows 95 or NT.

Outlook 97, a component of Office 97

From Microsoft Canada

Estimated street price $850 (full Office 97 Pro Edition)

Office 97 is perhaps the most useful and popular piece of desktop software on the planet. The industry generally agrees Office owns the majority of the suite market and Word dominates the world of word processing.

Yet Outlook has not been highly regarded to this point. Why? Part of the reason lies with its predecessor, Schedule+. Microsoft's first attempt at consolidating the various components of Office 95 was not as mature as the available PIMs, nor did it have the functions or power of contact managers.

Another part of the problem is that Outlook is big and slow. Obviously when Microsoft releases its flagship application there are high expectations. Equally obvious is the fact that the more features you claim into a new program the larger and more power hungry that software is going to be. Lastly Outlook was a new beast. It was neither fish nor fowl. Half email program, 60 percent address book, two cups calendar and one third to-do list—it pleased few.

And yet for all that, Outlook is a very competent program with extensive abilities. Microsoft Outlook 97 comprises an address book, an email client, a task list and a calendar. The address book is easily searched and customizable. However you cannot directly edit entries as you can in CorelCentral.

The email program is great and uses Microsoft Word as your email editor if you like. This means you can have all the features of Word 97 such as Auto Correct or Spell Check when composing email. If you open a received message and click in it, incorrect words will be underlined. The downside is that using Word means a performance hit as compared with the usual email editor.

The task list is decent but no more than this. Tasks can be organized by various fields

Continued on page 98

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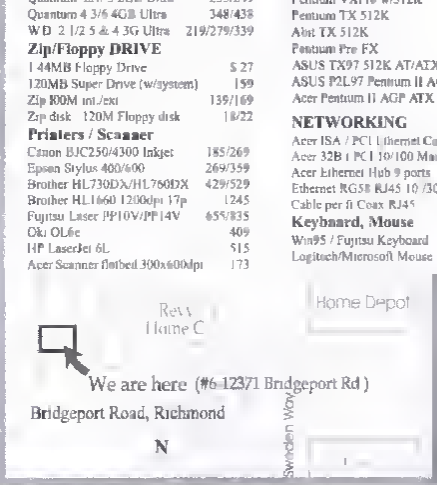

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Small Business Computing

MS Outlook vs. CorelControl

Continued from page 96

as you would expect but the conventions are unintuitive One good thing here is that sending an email message to the task folder opens a new task with that email message's Subject field copied to the task's Subject field Most of the time this means the user need only click on a due date for the new task before moving on to other things

There is an icon in Outlook called Journal and it hides a nifty little feature The Outlook Journal is a timeline Along the timeline can be email messages, Word or Excel files, telephone calls, or other items By looking at the week or month view and scrolling back you can see when you made a call, opened a file, or received an email Sometimes you know you had a call two months back, but can't remember any other details With the Journal simply click on the telephone calls timeline jump back a couple months and look. This is how software should work.

Outlook has hundreds of other features, such as various print options for day planners complete email handling features and integration between its address book information (names numbers dates) and merging between spreadsheets and word processing files Outlook is extremely drag and drop-able Almost anything can be dropped on anything else Right-click options are excellent Integration with Web-centric, Microsoft products such as NetMeeting and Internet Explorer are seamless

The over-hyped Help assistants mask a good Help system by annoying users with the same advice time and time again Outlook is not the best part of Office 97 but it is a vast improvement over Schedule+ Though a little heavy for older machines. All in all this is a competent addition to the suite and a good selection for a company looking for a one product solution for its business needs They used to say "No one ever got fired for buying IBM " Now-a-days they re saying the same thing about Microsoft

CorelControl 8 a component of WordPerfect Suite 8 Professional

From Corel Corporation

Estimated street price $699

Corel WordPerfect Suite 8 is a small business/home office product WP Suite 8 Professional is an enterprise-wide office suite that adds the following components to the standard product Paradox 8 the relational database Web.SiteBuilder 8, a Web authoring program, Time Line, a program to manage projects and Corel Central, the suite's unifying organizer/email program

Central combines calendaring, scheduling, address book and email functions using Netscape's Communicator. Corel Central works to integrate the components of Suite 8 in the same way that Outlook does Corel offers businesses a comparable software solution at a cheaper price

Central's address book is very nice There are many ways to view your contacts and you can even edit without having to open the individual contact It is possible to add custom fields to the address book, which is not possible in Outlook However the extensive fields of that program make it somewhat

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Managing those contacts

Continued from page 97

and appointments. Reports can be generated and fields calculated

There is an option for telephone integration and support for email Import and export is possible as is mail merge There is built in fax support TeleMagic Professional comes on floppy disks and can run on as little as a 386SX with 8 MB of RAM if necessary

This is a decent program that could work well for your business, but seems a little long in the tooth As well, there are areas where a user will want to use the good manuals included The newer and more powerful TeleMagic Enterprise, an SFA product is a better value for your dollar ☐

Contact:

GoldMine Software 301 17383 Sunset Blvd Pacific Palisades CA 90272 Tel 310-454-6300 Web site http://www.goldminesw.com

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TeleMagic, 800-17950 Preston Rd. Dallas TX 75252 Email Telemagi@istar.ca

■ SOFTWARE

Personal information manager round-up

BY ROD LAMIRAND

If you have a computer and you don't have a program to keep track of phone numbers and addresses, you are missing out on a number of very useful things.

PIMs don't just keep records of phone numbers and addresses they incorporate a calendar to-do lists and email

With PIMs you can put contact information onto the computer then save it to a disk to ensure it won't be lost. You can give that information to another person print the data in any number of ways to fit a notebook, journal or Rolodex Or you can search that information instantly If for example, you only remember a contact's street address or middle name You can have that person's address automatically inserted in the top of your word processor document fax or email message Or have the computer dial the person's phone number time the length of the call and open a spot for you to type in why you called You can type up a letter email or fax and tell the computer to insert each person from a list of contacts into the letter Thus your annual family up-date would be personalized for each person without your having to retype each name and address at the top of the message

Add to these basic features (which all the PIMs reviewed here offer) the many calendar, appointment, planning and tracking abilities also present and it takes but a minute to see that the computer is your best bet for organizing your personal records

Even though it takes but a minute to see the benefit of a PIM It takes much longer to master one For that reason the ease of use of each program is important. Unfortunately like chess and checkers things easy to master are often less substantial So it is a bit of a trade-off between getting what you want done easily and not buying a product with too many limitations

Another consideration is a PIM's ability to import information you may already have on your computer There are two ways you can move data into a new PIM One is using a specially written translator that has been written by the PIM's creator for a particular file type This is the easiest but often no such applet (mini-application) has been written for your specific data.

The second method is by exporting from one program to a common file type and then importing into another This is the most common way to proceed but also can be difficult as you must "map" the individual database fields from the old program into the new one Invariably there are different fields in each program and usually there are some difficulties in achieving a perfect translation.

On the upside, the PIM market is moving to greater and easier connectivity Some of the PIMs no longer force you to enter difficult to find information such as the Outgoing Mail Server name These programs search for an existing email setup and use it. Also all the programs automatically start up your browser and jump to a link when selected Internet connectivity is becoming systemic with Web Page fields program up-dating options product Web site buttons and some adherence to new information sharing protocols

The movement to a standard calendar and business card format would mean you could simply drag a person's business card from a Web page and all their data would be correctly entered in your contact database—no more typing in name address phone number, etc The same is true for the new calendering protocol If we had Net wide adherence you would be able to grab any calendar file on the Net and have it automatically work in your PIM or contact manager

If, for example, you wanted to have your company's calendar of events combined with your own personal PIM calendar, a simple Add Calendar would do it Perhaps you would like to incorporate the NHL game schedule—no problem The difficulty is, there are primarily two different and incompatible formats One is promoted by Microsoft and a few others and the other by Lotus and a lot of others This means that for the time being your PIM will be able to utilize these features in a few instances but for the most part you will only be able to use contact and calendar data from sites and individuals that use the same program as you.

The five programs below are all good products, each with its own strengths If you don't already have such a program one of these might be right for you

AnyTime Deluxe 5.0
From Individual Software Inc
Suggested retail price $49.95
Free trial from Web page

AnyTime Deluxe 5.0 is the latest version of Individual Software's PIM This version builds on previous ones by making email setup automatic for users of Microsoft Exchange or MAPI compliant programs Also new is the ability of users to download a variety of special

■ SOFTWARE

schedules and files including NFL NBA NHL, MLB golf and other sports event schedules. This same feature also offers lists of celebrity birthdays Moon phases and other possibly interesting data

AnyTime Deluxe is a Windows 3 1 or Windows 95 program for standalone use or for use in a small network Both a CD-ROM and floppy disks are included in the package The program is easy to use and fairly intuitive The features are good but not extensive One feature that I really liked was the Drag Net

Drag Net is an icon at the top of the calendar views which sits waiting for you to drop something onto it The information is then stored there while you leaf through the weeks or months to find the day or notepad that you want to place the data on Now just grab the Net Drag icon and drop the information wherever you please In essence this is the same as highlighting and copying, selecting and pasting However it is a good example of the kind of natural ease-of-use feature that makes a program good

AnyTime Deluxe has a decent list of features, however they are the expected rather than the innovative This is a good program with a pleasant interface It does seem rather cheeky to ask the user if the program should run on start up but hey a little pluck never hurt and besides perhaps some people might not know how to place something in their Start Up folder Of course, such a person would also not know how to remove an item from the Start Up folder and would be stuck with having to shut down AnyTime each time they started their computer This is a good little program with a very customizable interface

Day-Timer Organizer 98
From Day Timer Technologies
Suggested retail price $69 95
Free trial from Web page
Day Timer Organizer 98 is a powerful flexible, easy to use personal information manager that can be tightly integrated with the company's desktop paper-based organizers The program is available for Windows and Macintosh and manages schedules to-do lists, addresses phone calls notes and expenses

This new version has Web and email launchers customizable fields full text search linked phone log, expense tracking entry linking, and free form notes A selection of binders and computer forms designed to work with Day Timer Organizer is available to create a complete time management system.

Day Timer Organizer automatically launches a user s browser (Netscape Navigator or Microsoft Explorer) to go to any Web site recorded in a contact record or notes field Similarly for any email address entered Day Timer Organizer will launch an email package (on Windows any VIM or MAPI system on Macintosh Claris Emailer or Eudora) and pre-address a message

One of the best features is the quick fill data entry Quick fill lets the software guess what you are going to type based on previous entries It works quite well and is a real bonus here The company has 50 years of time management experience with paper based time management systems and it shows Day Timer claims 85 percent of people who use PIMs in their daily lives also carry paper-based planners. We are not sure if this is true however, it is clear that the combined use of the program and the notebook makes for a powerful system

In some programs the complexity of printing the information to a two sided, unusual-sized sheet is confusing The document management wizard in this program makes set up straightforward. Day-Timer now supports the Sharp OZ-600 series of handheld devices

The product can also be purchased as Day-Timer Organizer for Workgroups, which is a strong group-enabled scheduler/PIM Day-Timer Organizer for Workgroups runs on Novell Netware (v2 15 or higher) Netware Lite Banyan, IBM, Microsoft 3Com, LANtastic Windows for Workgroups, other fully NETBIOS-compatible networks and

Continued on page 105

MS Outlook vs CorelCentral
Continued from page 98
unlikely that you would need to

Both programs allow you to group address book entries but only Corel allows you to search by any field at all. Corel s product adheres to the vCalendar protocol so importing calendar information from other programs is easier There are also import options for address books from Netscape previous versions of Word Perfect and Sidekick as well as the usual ASCII text file ability

Central's to do list is top notch with easy categorization of items This is one area where Corel's program is superior to the Microsoft offering Again, one of the most useful abilities is that the user need not open a task to edit it. This saves clicks Also the to-do interface is less cluttered and easy to navigate

For all email and related functions such as browsing Central uses Netscape's newest communications suite Communicator. Thus Corel s suite offers the latest and most advanced features in this area The integration of the program is seamless and systemic This means that purchasing Suite 8 Professional is like buying Office 97 and Internet Explorer However, as IE is free the inclusion of Communicator is more of a necessity than anything else Still the combination of Corel Central s functions and those of Netscape's do present an appealing package

There are dozens of other features that could be mentioned from the excellent Barista technology which makes publishing to HTML a snap, to support for email message threading In the end Corel has a real contender If there is a concern for information systems managers and others who must decide on one suite, it is that Microsoft has so much of this market wrapped up that Corel may have a hard time keeping up to the investment dollars available to the Redmond giant This is a good organizer/communications component in a very good suite ❑

Contact.
Corel Corp 1600 Carling Ave Ottawa, ON K1Z 8R7
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■ KIDS

Pirates, knights and cowboys

CD-ROMs give new play value to old games and stories

BY JEAN ALLEN-IKESON

Children go through a stage at four to six years of age during which they discover that mom and dad are not all powerful. They switch the locus of their hero worship to more omnipotent figures such as cartoon superheros.

Every few years a new hero emerges to capture children's imaginations. Batman, Power Rangers, Ninja Turtles. Since we seem to be running out of contemporary superstars for young kids, software companies and kids have gone back to the old standbys of pirates, cowboys and knights and castles to stir dreams and enrich play. These characters have great advantages. They are based in history so it is easy to attach educational content to them and they are in the public domain with no royalties to boost the price of software.

Knights and castles

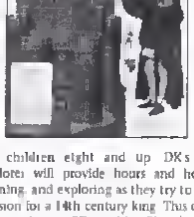
Knights and castles seem to be very popular both in software and with castle building sets in toy stores. Three of the four current medieval software titles are Canadian, the fourth is from DK (Dorling Kindersley), a British publisher best known for reference and information picture books and first-class reference CD-ROMs.

Nikolai's Knights
From H+a
Platform Windows 3.1/95 Macintosh
Price $25.99

Nikolai's Knights was originally marketed by Corel, but is now—along with the entire Nikolai series—in the hands of its developer Hoffman and Associates (H+a) in Toronto. H+a also developed most of Corel's educational, medical and home entertainment series.

In this medieval title Nikolai and his feline sidekick Neow-Neow flow through the pages of a storybook and history lesson packed with fun clickable hotspots. This is just the thing for this curious four to six age group. The audio portion of the disc can be turned off with pronunciation for individual problem words, if the child wants to read. Extras include a section that teaches about coats of arms and helps the child design and print an original insignia. Also included are age appropriate activities on medieval sieges, castles, armor and weapons.

Castle Explorer
From DK Multimedia
Platform Windows 3.1/95 Macintosh
Price $35.99



For children eight and up, DK's Castle Explorer will provide hours and hours of learning and exploring as they try to solve a mission for a 14th century king. This disc is a treat, with great 3D graphics. Play the role of either a page or spy and find out more about life in and around a medieval castle as you interact with the characters you meet. The depth and range of information is terrific.

In Medieval Times
Platform Windows 95
From H+a
Price $49.99

In Medieval Times, also from H+a, offers interactive problem solving in a medieval village in the shadow of a castle and abbey. Characters respond in video clips by answering questions, bartering with you or selling you the objects you need to complete a lesson. The characters tell you something about their life and work and are dressed in period costumes.

Continued on page 107

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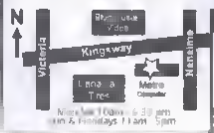

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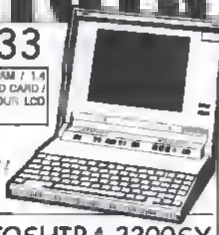

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SOFTWARE

Personal Information manager

Continued from page 101

AppleTalk Day Timer Organizer is one of the top three PIMs on the market and an excellent choice for a single on group work

SideKick 98

From StarFish Software
Suggested retail price $59.95
Free trial from Web page

SideKick 98 is a great little inexpensive program One of the originals SideKick has been around for years and only gets better The metaphor for the program is that of a desktop rather than the usual notebook or journal The look and feel of the program is very slick.

There are a number of pleasant details for example each month the calendar displays a small banner that invokes the feeling of that season As well there is a view of the world, called Earth Time which makes it easy to see where the sun is shining on the planet At a glance you can tell that has just become dark in Africa or is sunrise in New York.

Daily weekly, and monthly views are available and there is an ability to drag and drop items from one area to another although this feature is not universal SideKick 98 was one of the few programs that imported Microsoft card files and Schedule+ files perfectly You can also now import data from Microsoft Outlook 97 Schedule+ 7.0, and Lotus Organizer 97

As one would expect the program has a phone dialer recurring events support for Microsoft Exchange password protection and a slew of other features Sidekick supports the vCard and vCalendar protocol for easily sharing PIM data

Starfish is also promoting the use of SideKick with a little device that they developed with others called REX—wearable technology Sidekick 98 has the best bang for the buck of the programs reviewed here

Lotus Organizer 97GS for Windows 95/NT

From Lotus Development Corp
Suggested retail price $99.95
No free download but the online demo is pretty cool

Lotus always makes a great organizer and this is no exception It has a complete line of products from its [illegible] networking system Notes all the way down to Lotus Organizer 97

Organizer is really part of a much bigger pic ture The PIM works wonderfully as a standalone product but it can also be the front end for a Notes or Domino network set up—that's why the name includes the letters "GS" which stand for group scheduling It avoids the hassle of getting people to come online to a computer it is Lotus If you are interested in understanding the issues involved in group calendaring, scheduling and communicating via network take a look at the White Papers on the Lotus Web page

Organizer 97 is a full fledged information manager that can be purchased alone or as a [illegible] things you [illegible] a good [illegible] navigation tools

Other Organizer 97GS features include a new daily calendar view with appointments displayed as blocks of time in a graphical format a delivery of planned calls until completed and in the notepad section the ability to save [illegible] in RTF (rich text format) file

There are other interesting functions such as launching your Internet browser or [illegible] program but there is one very exciting thing that really presages the future of PIMs—on-the road Internet access to your PIM data

Organizer 97 Web Calendar a Web server application that enables Organizer 97 files to be accessed through Web browsers, is available as a free download from Lotus Web site Organizer 97 Web Calendar will allow Organizer 97GS users to access, share and manage schedules and tasks remotely over the Internet ➤

SOFTWARE

"Organizer 97 Web Calendar extends the power of the Organizer 97GS PIM allowing users to remotely access their calendars as well as share their schedules with co-workers, clients and suppliers via the Web or corporate Intranets," says Nina McIntyre, general manager Lotus Organizer.

Organizer 97 Web Calendar is a Common Gateway Interface (CGI) application that is installed onto a Web server allowing end users to save their Organizer 97 files onto a network file server or a Web server. Using Netscape Navigator 3.0 or Microsoft Internet Explorer 3.0 end users can then connect to a home page and access their Organizer information by specifying a file name and entering their password. Web Calendar then reads and displays the information stored in the file as a standard Web page.

Users also have the ability to post Organizer files that can be accessed and shared by multiple users. Any way you slice it, Organizer 97GS is great choice for your PIM, whether for personal or business use.

Janna Contact Personal
From Janna Systems Inc.
Suggested retail price: $89
Free trial from Web page

Janna Personal is one part of the Janna Contact family that runs from this stand-alone product through the group-oriented Contact Professional up to the corporate Janna Contact Enterprise. Like its bigger brother, Janna Professional Contact, Janna Personal is a very likeable program. The look and feel of it is similar to that of Microsoft Office 97, with which it is fully integrated. This is a 32 bit Windows 95 or NT program only.

Janna likes to point out that every thing you do in a PIM is about someone. And so the first thing you should do is go to that person and write, fax or email. Therefore, in Janna you can always see if you have written or called or posted something to that contact.

Janna Contact Personal has floating dock-able toolbars, unlimited addresses per contact and automatic sliders when windows don't fit on screen. One of the best things about Personal and Professional is that you can see all communication with a contact by looking under the Note tab. Here you will see document files, email messages, Web site addresses and other items as icons. This beats the usual list display by a mile. Clicking on the icon opens the file, in place. Janna Contact Personal also supports the PalmPilot personal digital assistant. There is nothing bad to say about Janna Contact Personal. This is a great PIM. ❑

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■ KIDS

Pirates, knights and cowboys
Continued from page 102

With each lesson, you begin with text that explains a process, such as candle making or forging a pewter mug. You then wander the village finding clues and obtaining the animal fat, wicks, and candle molds needed on your quest.

The flavor is a bit like a trip to a working heritage village, except a game is thrown in. There are nine quests to solve in the historically accurate 3D medieval village with 25 characters plus an online encyclopedia. Because each quest has five possible solutions, the two-CD set can be played over and over.

Une fete medievale/
A Medieval Celebration
From Micro Intel
Platform: Windows 3.1/95 Macintosh
Price: $34.95

This disc from Quebec's Micro-Intel is a bilingual "audio-rom." It is a delightful mix of games, drawings and paintings in a medieval style, and music, which includes over 35 minutes of medieval selections. Played on a standard CD-player or as an audio disc on your computer, the result is worth the price.

But, as an interactive CD-ROM, you explore, read historical notes and look for 10 missing objects to complete a game before your "life" runs out. You lose your life if you fail to answer questions about the historical notes you encounter. This requires that kids do more than skip and click through the screens. Of course, the wonderful music plays in the background and is a terrific change from most kids' games.

Pirates

Pirates bring to mind swash-buckling costumes and eye patches. However, these characters are part of history and often were supported or encouraged by governments seeking to enrich their treasuries. This and other historical/educational themes are played out for four to six year olds in Nikolai's Pirates and 10 year olds and up in Pirates!/Pirates!

Nikolai's Pirates
Platform: Windows 95 Power Macintosh
From: Hea
Price: $29.99

Nikolai's Pirates is a game for youngsters eager
Continued on page 109

CD REVIEWS

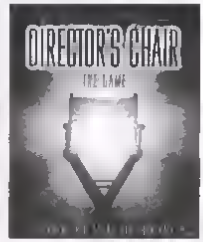
Director's Chair a realistic challenge

BY ROSS MACDONALD

Steven Spielberg's Director's Chair
From Microsoft
Estimated street price: $89.95

The three-CD-ROM Director's Chair isn't being "pushed" by Microsoft these days because it's last year's product and that company likes to address only the newest stuff. It remains current, however, and is such a captivating project cum game that it deserves some highlighting for those who've hitherto missed it (like me).

Essentially, Director's Chair works along the same lines as SimCity, SimEarth and any other Sim things that may be out there, in giving you the tools necessary to ultimately achieve a goal but leaving the decision making up to you. Here, you work toward becoming a blockbuster director by learning all the aspects involved in film making. There are cinematographers, editors, writers, special effects, sound effects, music and marketing people to deal with while trying to keep your movie on time and on budget. And, to make things even more realistic, the CD-ROM producers have conscripted the participation of Jennifer Anniston, Quentin Tarantino and the magical duo of Penn and Teller so you have some real celebrities to work with too.



Of course, you're not expected to wade right into the director's position because there's just too much to learn so you work your way through three levels of the movie hierarchy before becoming an "A" list director (if ever).

Level 1, the novice level, has you in a sort of apprenticeship to Spielberg, during which you learn the process of movie making step-by-step while putting together a small movie of your own. Once you're through that you get to work on a more complicated "B" movie before getting the opportunity to direct a big budget prime feature. Sooner or later (I didn't get that far yet) you'll make that "A" list and actually beat Spielberg out of the director's job for a $40-million extravaganza.

It's all very fun and extremely engaging to anyone who likes to watch movies and always wanted to make one.

Unfortunately, however, the limits of home computing make Director's Chair less of a creative process than we'd like because we're limited to the pre-filmed segments contained on the three discs. CD 1 contains pre-production and production stuff (budget, storyline, etc.) CD 2 is post-production (that's the sound, editing and music etc.) and CD 3 is where your final movie resides.

An advantage to those limits, however, is that you can collaborate with anyone else anywhere else as long as they have the discs too. Your decisions and constructions and edit points are saved in your computer system, which means you can put them onto floppies or email them to others who can tap in and make changes or additions whatever your collaborative arrangement happens to be.

The film segments are quite realistic and great fun to play with, but this process is entirely more difficult than anyone might imagine. It's completely non-repetitive and totally engrossing for long periods of time though, like most challenges, it can be extremely maddening too. This is a CD-ROM set that won't be gathering dust for a long time to come. ❑

Pirates, knights and cowboys
Continued from page 107

to sail the Caribbean in search of pieces of a lost treasure map in then search they must help Nikolai and Neow-Neow solve puzzles fight enemy ships and explore tropical

islands Kids learn how pirates navigated by the stars and read maps using latitude and longitude The disc also contains stories of famous pirates a time line of pirate history and descriptions of what pirates ate then weapons and ships

Nikolai and Neow Neow who have almost reached cult status will enchant their young fans in this new adventure

Pirates!Pirates!
Platform Windows Macintosh
From Micro Intel
Price $44 95

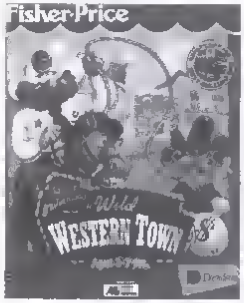
This is another disc from Micro Intel It's a game but don t expect arcade-type play Because of the text and comprehension needed a nine year old would be able to use it but it is targeted at 11 to 13 year olds It is a thoughtful adventure with box after box of stories and facts about Caribbean pirates their exploits lives, environment ships and more

By clicking on objects throughout the pirate ship videos of pirate facts or written and illustrated text pop up Turn a corner and a puzzle or question will test your knowledge Succeed and you earn a piece of eight lose and your pile goes down. An evil pirate is always lurking to snatch your pieces of eight when you least expect it This game may be frustrating at first for kids used to clicking and running

I sat down with my eight and eleven year old boys and encouraged them to read the text boxes before they rushed through the disc Once they got the idea they eagerly stuck with game until the treasure map was complete The object of the game is to find the 10 hidden pieces of the map This is a great format for learning the history of early Caribbean pirates

Cowboys

Fisher Price Wild Western Town
From Davidson
Platform Windows 3 1/95 Macintosh
Price $29



Yee-haw! Kids will want to grab ol blue and ride Into Fisher Price Wild Western Town to go on a scavenger hunt for gold design wacky wanted posters or sing-along with Western tunes Even exploring the hundreds of hidden animations is sure to produce giggles in three- to seven year olds

This story is the third in Davison's Great Adventure Series which includes Castle and Pirate Ship both are as fun and full of pranks and early learning as this new title Problem solving and reading comprehension are so well integrated into the story that kids will hardly notice they are doing so much learning

Davidson has done an exceptional job in making learning enjoyable and interactive. Even my eight year old had fun roaming the range Yet preschoolers should not find the program difficult to navigate ❑

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WOW! Winter Olympic fever hits the Web

JEAN ALLEN-IKESON

The 1998 Winter Olympics in Nagano, Japan will be an interactive event thanks to the support of the Sentor alliance of Canadian telecommunication companies and the CBC. Two sites on the Web are available: one for teachers and educators and the other for the general population of wired Canadians.

The idea is to promote pride in Canadian athletics and involve Canadians with Olympic "culture" and goals. Canadians of all ages will be able to talk to Canadian athletes using email on both Web sites. This year, we will have a direct link and be able to ask questions without depending on the media to pose them for us and translate the responses.

The site called WOW! at http://www.youtholympic.coa.ca, targeted at kids and educators, has been building since June, has been fully functional since October and will run until March. It was chosen by Yahoo! as a Pick of the Week in October.

It's packed with information on Japan, the Olympics and Paralympics, contests, and games, and features the Ask-an-Athlete section. The latter has a new athlete every two weeks. Indeed, the look and content of the Web site changes frequently to keep kids coming back. It is primarily intended for children in Grades 4 to 6 and their teachers.

According to Charmaine Crooks, five-time Olympian, a silver medalist in the 1984 Los Angeles Olympics and ambassador for the Youth Olympic Program, the WOW! site is one of three activities of the program, which also includes an educational resource kit distributed free to elementary schools across Canada (for home schoolers and others who may have missed it). It can be ordered through the Web site.

Crooks and other athletes have been visiting 200 randomly selected schools directly in this program "to share their experiences." She sees the athletes' direct involvement in mentoring through the Web site as "role modelling over the Net that is a fabulous way for kids to get closer to the athletes." It is a "way to encourage kids to get involved in sports, not by winning but by setting goals and challenging themselves, a commitment that can then be transferred to other aspects of life."

Crooks also views the site as a way to promote multiculturalism between Canadian children and athletes and other children around the world. The site is available in French and English. Other sections let youngsters jam with Japanese instruments or access

■ KIDS

information on Japanese history and geography. The Kids Media Club is a wacky linked site for Japanese kids learning English and for Canadians wanting Japanese pen pals.

An activity that has generated enthusiasm is the Picasso Postcard Challenge. Ten entries in this postcard contest will be chosen as official Olympic postcards. All kids will then be able to chose one to send to Canadian athletes in Nagano using the Internet.

The For Teachers Only section has hundreds of pages of teaching resources and well researched links to other pages designed to bring home the Olympic spirit. This is a must-visit for teachers and includes activities on math, language, geography and more. Awesome. Both the kids and teachers Internet links in WOW! are some of the best researched lists I have seen.

WOW! was "designed and developed with kids in mind" by Sympatico according to Linda Forestell, general manager for Corporate Communications for NBTel and Bruncor. They wanted to bring the Olympic experience into the classroom in a totally interactive way so that it would no longer be a passive spectator sport for most Canadians. Focus groups tested the site before it went on the Web to ensure activities were successful.

The consumer site, which will be functional from December to March at http://www.cbc.sympatico.ca, will be a collaboration of the CBC, Stentor and MediaLinx. Content is being developed by CBC and will be promoted on television in advance and during the games, according to Forestell. Like the kids' site, it will be interactive but with video clips, text and audio. The video aspect promises to be most active during the Olympics and is billed as the closest thing to real-time viewing next to live television broadcasts (which will be at odd times due to the time difference between Canada and Nagano). It will also feature a contest. ❑

■ GAMES

Virtual flying taken to new heights

Microsoft Flight Simulator grows up

BY MICHAEL WILLEMS & KEITH SCHENGILI ROBERTS

Microsoft Flight Simulator 98
From Microsoft
Minimum system requirements: Multimedia PC with 486DX/66 MHz, Windows 95 or NT 4.0, 8 MB of RAM for Windows 95, 12 MB for Windows NT Workstation, 100 MB hard-disk space, 2x CD-ROM drive, Super VGA 256-color monitor, mouse (joystick recommended) and a sound card
Price: $78.95

Since its earliest version, Flight Simulator has been great for pilots and would-be pilots alike. Microsoft Flight Simulator is one of those classic games that have been around almost as long as the PC itself, and it has steadily been getting better and better. It has always been fun to do a mental switch when playing the simulation to imagine that you are in the real cockpit, successfully landing a plane.

With increasing photorealism in Microsoft Flight Simulator 98, it is sometimes hard to remember you're flying a simulation, especially when you are about to crash. If you want a flight simulator that will make you sweat, then the new Microsoft Flight Simulator is for you.

The previous version of this game—Microsoft Flight Simulator for Windows 95—had a number of bugs, and in spite of the name, was not well integrated into Windows 95. The user interface was non-standard and

GAMES

many functions did not work well. There was also a trade-off between photorealism and speed. It seemed that if you wanted to get both at once you would need a Cray super computer. Needless to say most PCs were not up to the task. It is a pleasure to say that these problems have been addressed in the new version.

For test purposes FS95 was installed on a two-year old system with a 166 MHz Pentium processor, 32 MB RAM, an ATI video card and a cheap $15 joystick. This is a pretty much a typical system for many people. no fast video, maxed out RAM or MMX chips here. Installing FS is a bit nerve racking you have to install DirectX from the same CD-ROM which in this case necessitated (through one of those well known Microsoft "recommendations without alternatives") removal of an ATI video driver, WAVE32 driver and Sound Blaster driver! On a wing a prayer, it was all installed and thankfully nothing appears to have been affected on the system. Still there's got to be a better way. Having said all that. Installation is actually pretty simple and comes with good sound and visual effects. After install reboot and hey presto you're done.

There are several installation options minimum install uses CD-ROM files instead of the hard drive but a typical install uses about 100 MB. For example, an installation that includes Europe, Hong Kong, the Great Lakes region, Canada, and all associated sound effects onto the hard drive used up about 100 MB.

First impression. Wow! You start up at Meigs Field Chicago as is traditional, but you immediately see, hear and feel the differences. The cockpit is much more realistic with a fully graphical control panel and 3D throttle, prop and mixture controls. Engine RPM is now a clock display instead of the old unrealistic digital display. The sound actually works and is much improved. The engine idle sound is exactly like the Lycoming engine that powers a real Cessna ▶

GAMES

When you land the wheel touchdown sound is in stereo, so you can tell which wheel touches down first! The default visual mode is excellent hazy skies wispy clouds a looming moon, textured airplane surfaces better runway textures and similar effects all combine to truly extend the "reality envelope". A new "virtual cockpit" view gives you a Virtual Reality view outside including a rotating propeller in front of you What's even more amazing is that it's fast. No slowly updating flicker It's like you've actually got that Cray

There are also significant improvements in the virtual world around you Like in the previous version the Greater Toronto area is present so you can fly from Suttonville to Lester B Person International airport If you want but you can also choose from over 3,000 additional airports worldwide After landing at Hong Kong and taxiing to the gate you really feel like stealing yourself to go through the ordeal of customs Anybody who knows Hong Kong will realize that the virtual one presented here is missing the brand new exhibition centre but the other buildings are there—even down to the glaring neon advertising Looking for the Akihabara In Tokyo Toronto's Skydome and CN tower Paris Eiffel Tower, or London's Big Ben? They're all there and they add to the realism

There are some new planes included the standard Cessna a new Learjet 45 and for the first time a helicopter a Bell 206B The helicopter is a real challenge Expect to have to go through the built-in training to successfully take off While challenging the lack of rudder pedals (actually anti torque pedals), is a real impediment to landing and hovering a helicopter Would be helicopter pilots would be well advised to consider investing in a joystick with foot pedals Like the other planes the helicopter feels and sounds real Several flight models in this flight simulator have been tested by test pilots for the manufacturers—and it shows! There is multimedia flight training for all of the planes included with the simulator including film sequences of real life maneuvers This is nice but a simple checklist would be a better way of getting would be pilots going quickly

Not everything is perfect The initial flight settings are still too simple, and saving your settings is trickier than it needs to be In the new Cessna 1825 (no retractable gear so it is really more like a Cessna 172 there is no carb heat, no main electrical switch no magnetic compass unless you explicitly switch it on and where is the fuel selector?

When you fly in "coordinated" mode (as you have no rudder pedals on most PCs rudder extension is set to automatic) the control display does not move to show you rudder movement, leading you to question whether the coordinated mode has been selected Flap extension sound is sometimes louder than it should be and engine sound is really way too quiet—a concession to virtual pilots who don't like noise? The interactive learning mode is great but sometimes the lessons are not interactive

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BOOKS

Canadian Internet Handbook takes cultural focus

BY KEITH SCHENGILI ROBERTS

1998 Canadian Internet Handbook
Author: Jim Carroll and Rick Broadhead
Publisher: Prentice Hall Canada
ISBN: 0-13-897554 X
Softcover 365 pages 1997
Price $24 95

Jim Carroll and Rick Broadhead are a publishing powerhouse to be reckoned with when it comes to books on the Canadian Internet. With almost 20 best-selling titles to their credit and several hundreds of thousands of copies of their books sold, there are few wired Canadian households that do not contain a copy of at least one of their books. Over the years the Internet has greatly evolved and matured as more and more Canadians get online. Recognizing this, Carroll and Broadhead have taken a new tack with this, the latest edition of their popular *Canadian Internet Handbook*, by moving away from the merely mechanical realm of "how to" to the concerns and issues of the online culture that has rapidly emerged. This new edition represents a major step forward for Carroll and Broadhead who have just written what should be considered the definitive book on the state of the Net in Canada.

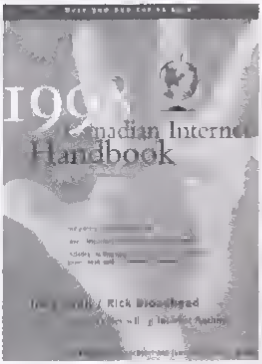
The book begins with a brief retrospective starting with a peek back at the contents of their first *Canadian Internet Handbook* back in March of 1994. It is amazing how much has changed since that time: back then there were still restrictions to commercial enterprises getting on the Net, junk mail was unheard of and there were only a few thousand Web sites which were restricted largely to academic institutions. You only have to be on the Net a short while to realize how much things have changed. One of the many interesting tidbits of information that emerges from the book is a prediction that as much as five percent of the gross domestic product of the top 25 economies in the world will be based on Internet transactions by 2000—that's a lot of bucks and a helluva long way for something that did not even have a commercial presence less than a decade ago. This is only one of the many things that have changed and the Net can no longer be considered insignificant. The Net is here. It is making an impact, and it can no longer be ignored.

Carroll and Broadhead divide up this new book into six sections most of which look at how the Internet is affecting (and is affected by) politics, business and the media. The authors do their research and are good at exposing and exploring many of the concerns of the wired public. This past year has seen its share of controversy over Net issues, and many of them are explored in this book. For example: there's the now infamous steps Elections Canada took to shut down anonymous political Web sites. Is it an attempt to quell free speech, or is it justified in terms of keeping tabs on possible excesses in political spending? Carroll and Broadhead deal fairly with the issue but ultimately point out how such actions invariably are circumvented by the Net community, and question whether or not the Net can be regulated in any meaningful sense.

Net society has also changed significantly since the original book. The authors turn their baleful eyes onto the subject of spam email: the causes and forces behind it, how it works and what you can do to combat it.

The business of the Web

The business section of this book should be considered "must reading" for any firm that either wants to get on the Web or have a Web site for commercial reasons. The vast majority



of business books about the Web talk about it in terms of its unlimited potentials and then focus on the "how to" aspects. This is the first book this reviewer has seen that taken a hard look at the aftermath of many such enthusiastic if over-reaching attempts by businesses to get online.

In the first edition of this book, the authors found 29 wired Canadian businesses. The authors revisited these original 29 to see how they had progressed. Several had folded, some changed little since their inception and only a small number said the Net presence had made a real difference in terms of revenue.

They also take a look at the many reasons why some businesses set up Web sites and have come up with a list of dos and don'ts for getting on (and more importantly staying relevant on) the Web. There's some sound advice [illegible] only [illegible] well [illegible] to read.

The techies will not be disappointed in this book—there's plenty of nitty gritty hands-on material to be found in the technology section. If you are looking to simply set up a single Net connection on your Mac or PC or to set up multiple machines at home through a network you can find out more about it here. The section also examines how to go about setting up a cable modem in the home, and how to best deal with computer security issues.

With this book, Carroll and Broadhead have again done what they do best: found a fresh way to write about the Internet in a style that is both engaging and insightful. *The Canadian Internet Handbook* is the flagship title in their annual "fleet" of books, and their rational approach provides a calm centre in the tempestuous hurricane of information and issues that swirls around the Internet in the largely unwired realm of public opinion. The issues covered in this book reveal that the Internet has matured in a relatively short time and this book looks at many of its growing pains. This book is for the concerned Canadian citizen who is already wired—if you are looking for an education about how the Net is affecting all our lives, then this book is for you.

Highly recommended—I guarantee you will find something eye-opening in this book. ❑

Rating
Information content: ****
Readability: *****
Intended for: Intermediate/Expert
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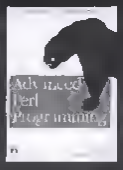

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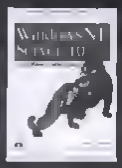

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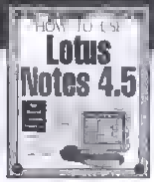

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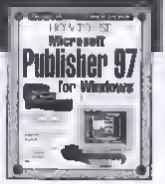

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BOOKS

Handbook a boon to new Internet users

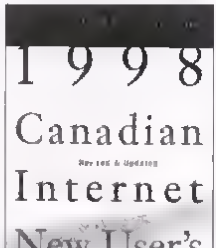
BY KEITH SCHENGILI-ROBERTS

1998 Canadian Internet New User's Handbook
Authors Jim Carroll and Rick Broadhead
Publisher Prentice Hall Canada
Price $18.95
ISBN 0-13 776410-3
Softcover 198 pages 1997

New to the Net? Wondering about the Web? Eager to email? The Internet can be a complicated place for the beginner. Like how do you set up an Internet connection on your computer? Or where can you go to find a particular Web page? What exactly are Usenet newsgroups, and how do you post to one? Once you've set up your computer and learned some of the basics. It is easy to make your own way through the Net. But how do you get to that first step? If you are a beginning Internet user—or you know one—then it is hard to go wrong with this slim little book. *The 1998 Canadian Internet New User's Handbook* is a great road map for the those who want to jump into the last lane of the information superhighway.

The *New User's Handbook* is designed to get the new user up and running quickly, and, thankfully for the Net newbie uses a jargon-free approach to the subject. This is Jim Carroll and Rick Broadhead's second book aimed specifically at new Internet users, following on the success of last year's Introductory handbook. Over time the Carroll and Broadhead books are getting further refined in the topics they cover, and this one has narrowed down its focus to the "three pillars" of the Internet the Web email and Usenet newsgroups.

This small book (which is roughly the same size as the authors first *Canadian Internet Handbook* whose current edition runs to over 360 full sized pages) follows the same format established in the initial *New User's Handbook*. Anybody who saw last year's handbook will recognize many familiar elements here, a cross-country tour on the Web exploding many of the common negative myths about the Web and the basics of how to "plug-in" to the Net—all designed to get the new Internet user comfortable with working and playing on the Internet. The whole book is completely revised and updated to reflect the current state of the Internet looking at the latest browsers and search engines.



This book is ideal if you have just signed up with an Internet service provider and are looking for a way to get the most out of your new account. If you bought a copy of last year's handbook, you probably won't get much more out of this—but that's reasonable since you are not likely to need another beginner's book on the Net anyway.

Just in time for Christmas, this is the ideal stocking-stuffer for the newly wired. ❑

Rating
Information content: ****
Readability: *****
Intended for: Beginner
Overall Rating: ***1/2

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Windows 98 tips and tricks • NB—This is one of the first Web sites we have come across devoted to Microsoft's Windows98 operating system the next generation version of the Windows interface scheduled for introduction in 1998. You can find some general information, links to service packs, information on becoming a beta tester and more and this non Microsoft site.

Web http://mirmsoftwindows98.com

BOOKS

Revision improves Internet 'yellow pages'

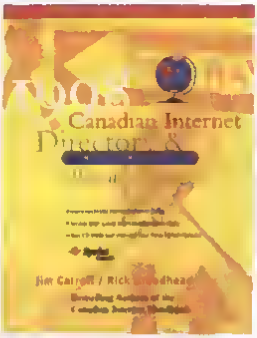
BY KEITH SCHENGILI ROBERTS

1998 Canadian Internet Directory and Research Guide
Authors Jim Carroll and Rick Broadhead
Publisher Prentice Hall Canada
Price $24.95
ISBN 0-13-867554-X
Softcover 365 pages 1997

This book is authors Jim Carroll and Rick Broadhead's version of the "yellow pages" of the Internet for Canadians. This is the second edition of this book and it is much improved over its predecessor. More experienced Net surfers will get little out of this book, but it makes a good companion guide for anybody just starting out on the Internet.

The first edition of this book got a drubbing from this reviewer last year, but the chief deficiencies of that edition have been overcome in the latest version. The initial directory was just that—a listing of Internet sites (primarily Web sites) and nothing more. All of those same sites could have been found on any Web search engine, if you knew how to do it. This edition includes an extensive introduction on how to find what you are looking for on various search engines, and is aimed squarely at new users—the people who will get the most out of this book.

The majority of the sites listed are of interest to Canadians and are fastidiously arranged by category. Looking for the Web sites for Canadian radio or TV stations? Or maybe you are trying to look up information from a particular provincial or federal agency? Or perhaps you want to check out the lowdown on the Canadian sports scene. With listings and descriptions of over 3,000 of Canada's best Internet sites and resources, if it's on the Net and it's Canadian, chances are you will find it here.



While it is hard to knock this book in terms of content, arguably the whole point of the Internet is to make books like this "directory" obsolete. The addition of the "how to search" section and an alphabetical index of all of the sites listed in the book (a crucial section that was absent in the first edition) make this a much-improved edition. It makes a good companion to the authors new *1998 Canadian Internet New User's Handbook* ❑

Rating

Information content: ★★★
Readability: ★★★★
Intended for: Beginner
Overall Rating: ★★★1/2

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Virtual flying takes to new heights
Continued from page 114

enough. Take this situation after a really bad helicopter takeoff, the instructor's voice said "the lesson will end here, you can continue to practice"—all this while being inverted at 50 feet above the ground, doing 100 knots and heading for a very messy death on the ground!

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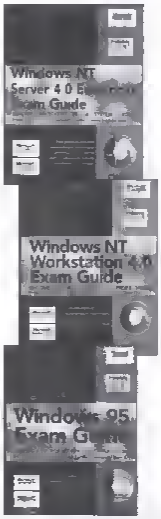

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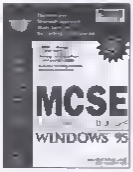

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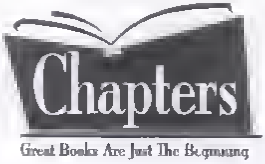

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■ ONLINE

Weaving your own Web site: Part XXVIII

Handy Unix commands: Part I

BY KEITH SCHENGILI-ROBERTS

If your Web server uses the Unix operating system chances are you will find that knowledge of some basic Unix commands will do in good stead later Don't feel you have to learn everything about the Unix operating system—you just need to know enough to get around the system easily and to be able manage the files that comprise your Web site

If you are familiar with DOS and have used it extensively, you will already have a good idea of how Unix works. While there are versions of Unix that have much in common with Windowing operating systems like MS-Windows and Macintosh, the type of Unix most Webmasters are likely to deal with is text-based, where users enter commands to be run at the command line Anybody who knows Unix at all will tell you that the following listing is far from being a comprehensive list of Unix commands but for many people it is all they need to know to get around.

Some useful Unix commands

- **cd** Change Directory Change to a different directory level
- **chmod** Change MODe Sets read/write permission for files/directories.
- **cp** CoPy Copy files
- **lcd** Local Change Directory Change the directory at the local machine
- **ln** Makes a LiNk to a file
- **ls** LiSt Displays a directory listing
- **man** MANual Displays detailed information about a Unix command
- **mkdir** MaKe DiRectory Creates a file directory
- **mput** PUTs Many files to the target location
- **put** PUTs a single file to the target location
- **pwd** Returns working directory name
- **mv** MoVe Move files.
- **rm** ReMove file Deletes files from the server
- **rmdir** ReMove DiRectory Deletes the specified directory from the server
- **ls** Displays a local directory LiSting
- **lpwd** Returns working local directory name

Many ISPs (though not all) provide what is called "shell access," which allows you to connect directly to your Web server and configure aspects of your Web site while connected to it. In most cases, in order to logon to the Web server you will have to use a communications program to connect to it. You can do this with any stand-alone dialing program like HyperTerminal in 32-bit MS-Windows operating systems. The same thing can be also be accomplished by connecting to your ISP in the usual manner (usually through a WinSock program or an Internet Dialing program) and then running a telnet program

If you have 32-bit MS Windows operating systems, you've got a copy of it already; from the Start menu click Run, type in "telnet" (without the quotes) and then click OK. A telnet window appears at which point you simply type in your username and password (most often the same name and password used to connect to your ISP in the first place) Once you are logged in you are set to configure things on the Web server

First off you need to know how to move around and list the files on your server There are two commands that do this. ls and cd The "ls" command stands for "LiSt", and displays all of the files in a directory. To move between directories use the "cd" (Change Directory) command To move to a directory, type the following at the prompt:

cd [name_of_directory]

To move up a directory type the following.

cd ..

If you know the path, you can go as many directory levels at once, as in the following example

cd [directory1]/[directory2]/[directory3]

Most Unix commands have "switches," which allow the user to add extra functions to the command. The "cd" command does not have many switches that are particularly useful for most users but the "ls" command does.

Continued on page 125

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■ ONLINE

Weaving your own Web site

Continued from page 122

Here's a listing and description of some of them

- -C Forces multi-column display of the directory list ing
- -l Displays the directory listing in a long format.
- -t Sort the display by the time it was last modified
- -T Displays complete time information for each file listed including the month day hour minute second and year

Note that the switches like the Unix commands themselves are case-sensitive Unix is a case sensitive operating system and it is important that you get the case right.

Once you know your way around the Web server you can begin to do things to the files that comprise your Web site

To copy and move files use the cp* and "mv" commands respectively If you are familiar with the equivalent MS-DOS copy and move commands you already know how these commands work Simply type the command the file or files to copy or move and the destination they are to go to as in the following example

cp [filename] /[destination]

and

mv [filename] /[destination]

Both "cp" and "mv" take a wildcard function which means you can move a bunch of files at once To copy all files beginning with the letter "s", type in the following:

cp s* /[destination]

To move all files with the extension .html, type in the following

mv *.html /[destination]

Both the cp and mv commands have several switches in common. Here's a brief listing of the more commonly used switches.

- -f If there is an existing file with the same name in the target directory this switch instructs the copy or move command to overwrite it.
- -i If there is an existing file with the same name in the target directory, this switch instructs the copy or move command to prompt the user whether or not the target file should be overwritten first.

Creating and removing directories

To keep better track of all of the files on your Web server It is best to arrange files into directory structures For example, many Web masters keep such things as images, Java applets, cascading style sheet pages, html files and related information In separate directories This arrangement keeps things neat and tidy on your Web server and you will always be able to track down certain files on the Web server.

To create and remove directories, use the mkdir and rmdir commands ("MaKe directory" and "ReMove directory") respectively To create or remove a directory simply type the command at the prompt followed by the name of the directory to create or remove as in the following example

mkdir images

or

rmdir gifs

Here's a brief listing of the more commonly used switches for both mkdir and rmdir

- -d Removes directories and other types of files
- -f Removes files without prompting for confirmation regardless of the file's permissions
- -i Prompts the user for confirmation before attempting to remove each file

Similar in function to the "rmdir" command is the "rm" ("ReMove") command The "rm" command is very powerful and must be used carefully—there are far too many tales of woe by people who accidentally erased more files than they intended to by using this command For example, if you type in rm * from the root (top most) directory on your Web server you are telling the command to remove all files from the system. On some systems this can also remove any directories and the files they contain that lie under the root directory Try to only use this command for specific files, as in the following cases

rm ugly.html

or

rm u*.html

Don't forget when you are done to type "exit" from within your telnet session to log off your Web server. ❑

Next time: More Unix commands and setting permissions

Keith Scheuglli-Roberts welcomes any comments suggestions or HTML tips and tricks you may have You can email Keith at: kscheugli@nterlog.com His book on HTML *The Advanced HTML Companion* (ISBN 0-12-623540-8) is available in bookstores Previous articles in the series can be found at *The Computer Paper* Web site at: http://tcp.ca/

Cyberskies online • All—Cyberskies calls itself "the source for aviation enthusiasts." On the Web site, you'll find lots and lots about airplanes whether they're private, commercial military or even models The "flying contraption of the month" takes a close-up look at one aircraft and "inbound" allows users to submit their own stories Agony aunt "Crash Landers" helps visitors solve their problems.

Web site, http://www.cyberskies.com

■ TUCOWS SHAREWARE

Weather reports for your desktop

BY SCOTT SWEDORSKI

You've dug up those snow-boots and shovel (or in British Columbia, those rain boots Gortex jacket and umbrella) and parked them by the door You checked the furnace cleared out the filters, and hit up the local dealership for that new battery and emergency car-care kit. Now how can TUCOWS help you cope with Canadian winters?

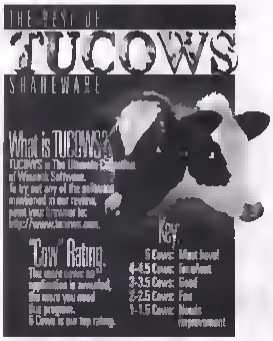
Believe it or not there are programs that provide real-time weather information over the Internet They may not cover every area of the world, but they provide a very comprehensive listing Now you don't have to wait for the Weather Channel to get around to your area You can log on and check the forecast even have a pop up in your system tray These applications are especially handy for travelers you can check for the latest weather at your destination before you go to the airport

Canadian Weather Forecaster
Version 1 1
Revision date Jan 8 1997
Filename canweat1.zip
Byte size 753 916
Licence: Shareware
NT Compatible Yes

CanWeather is an animated Canadian Weather Forecast program aid that resides in the system tray The program accesses the National Weather Service site at ftp.on.doe ca to get automatic two-day forecasts for 24 Canadian cities You can specify French or English service

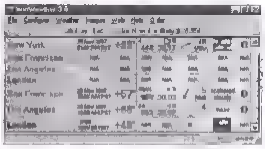
Tray Temperature
Version 1 1
Revision date Sept. 3 1997
Filename tray12.zip
Byte size 2 852 282
Licence Shareware
Homepage
http://www.futuresolution.com/TrayTemp/TrayTemp.htm
NT Compatible Yes
Puts the current temperature of your city at your fingertips by placing it in the system tray You can configure the city interval of retrieval and even if you want it to put a cloud in your tray if your forecast looks cloudy Supports a comprehensive list of over 1,400 cities throughout the U S.

WetSock
Version 3 1
Revision date Nov 7 1997



Filename wetsocks exe
Byte size 917 787
Licence Shareware
HomePage http://www.locutuscodeware.com/
NT Compatible Yes
WetSock shows your current weather conditions and forecasts. Its icon sits in the tray notification area of the system taskbar, changing from sunny to cloudy to snowy, depending on the current weather conditions WetSock can be configured to keep you updated about the weather over Internet without even needing to dial into your Internet service provider Wetsock is a comprehensive traveler's tool covering Canada the U.S Mexico Europe Australia and Asia

WinWeather
Version 3.0
Revision date July 31 1997
Filename weath32.exe
Byte size 728 951
Licence Shareware
Home page http://www.igsnet.com/igs
Also available Windows 3.x Version
NT Compatible Yes



WinWeather is an excellent program that shows hourly weather reports and forecasts for a variety of cities. Coverage in the registered version is International but the demonstration version is limited to the United States In addition to standard weather reports, there

Continued on page 131

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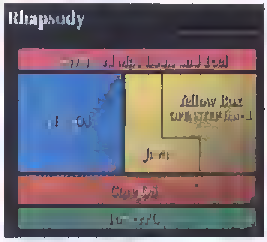
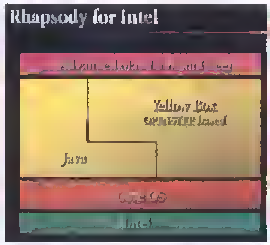
MAC ARENA

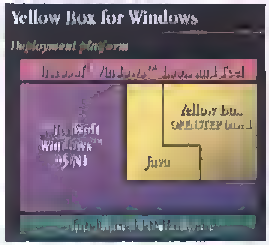
Rhapsody sings siren song to developers

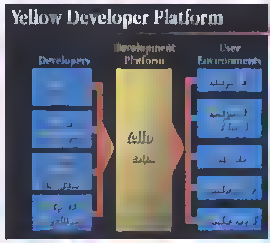
BY PETER MILBURN

In October 1997—a mere 10 months after its acquisition of Next—Apple achieved a significant milestone. Of course, I'm talking about the release of the developer version Rhapsody for PowerPC, the code name for Apple's next generation operating system. The developer versions of Rhapsody for Intel and Yellow Box for Windows will also have shipped by the time you read this.









The Rhapsody developer release, as the name implies, is not meant for consumption by end users. Several OS components intended for the final release are either missing or not fully implemented. Most noticeable is the lack of both a full-fledged Mac OS look-and-feel and the compatibility environment known as Blue Box (more about this later). However, this release is mature enough for developers to begin familiarizing themselves with part of Rhapsody's environment, called Yellow Box, and to begin the process of writing new applications (or converting their existing Mac OS applications). The developer release will be followed by the premiere release scheduled (optimistically) for early 1998 (for early adopters), and the unified release in mid 1998 (for the mainstream market).

Rhapsody is not a replacement for the traditional Mac OS 8 and beyond. Instead, development of these technologies will continue on a parallel track, thereby giving users the option to migrate when they feel it is necessary. However, Rhapsody for PowerPC users will not have to leave their Mac OS applications behind because of the Blue Box compatibility engine.

Unfortunately, there are still many errors and misconceptions in reports about Rhapsody. What I'd like to do in this article is to explain what Rhapsody is, and what it holds in store for developers and end users.

What is Rhapsody?

Generally speaking, Rhapsody is a melding of current and future OS technologies from Apple (and the former Next Inc.) into a uniquely modular object-oriented, cross-platform operating system.

From a developer's perspective, it can be summed up succinctly as a true "program-once-deploy-everywhere," rapid application development environment. If you think this sounds exactly like the Java mantra, you're right. But there are important differences, which I will discuss later when covering Rhapsody's Java implementation.

What makes this programming panacea possible? The magic bullet is code-named Yellow Box, a feature-rich, object-oriented programming interface that is often generically referred to as an API (application programming interface). In essence, Yellow Box has been designed to sit on top of any operating system, thereby making it multi-platform.

There is a widespread misconception that Yellow Box equals what was formerly called OpenStep. In fact, Yellow Box is a superset of the OpenStep API. It is a fourth generation set of object-based libraries that will also include access to many advanced Apple technologies such as the Quicktime Media Layer (Quicktime, Quicktime VR, QuickDraw 3D), AppleScript, ColorSync, GX Typography and many others. As part of OpenStep, the former Next brought to the table enhanced versions of the Display Postscript screen imaging model, as well as WebObjects and the EOF (Enterprise Object Framework), both of which are advanced developer tools for the world of network distributed computing.

A question often raised by developers is, "Why should I go to the trouble of learning a

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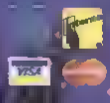

GET CONNECTED

654-6088

MAC ARENA

Rhapsody sings siren song

Continued from page 128

completely new API (Yellow Box) if the one I am already familiar with (Mac OS Win 95/NT etc) already suits my business targets?" Here are some arguments that Rhapsody proponents will use to try and convince you

- The high level, object-oriented libraries inside Yellow Box are years ahead of the capabilities of conventional procedural programming tools. Object libraries leverage your programming productivity by at least one order of magnitude over those conventional tools. This advantage by itself more than makes up for the short-term pain of learning a new API.
- Yellow Box is largely a proven API whose object libraries are time-tested. The object approach to programming means you'll spend less time debugging your mainstream and vertical applications and more time accessing sophisticated system services that add unique local and network distributed features.
- If you are a larger development house you're probably maintaining several code bases for different platforms (i e Mac, UNIX, Windows). With Rhapsody there is only one code base to maintain whether you develop on Intel or PowerPC. When you are finished programming in Yellow Box, you simply compile for your target platforms. You won't have to deal with the tedious and expensive process of porting and debugging applications, then tailoring them for a specific platform.
- Your applications will automatically tap into the highly scalable power of UNIX, which includes robust modern capabilities such as pre-emptive multi-tasking, multi-threading, multi-processing, protected memory, sparse virtual memory and sophisticated networking capabilities.
- Last, but not least your applications are capable of addressing 100 percent of the market, and by default are able to share data seamlessly

These are tantalizing advantages to developers, but what about end users?

Many of the advantages are similar to those of developers, but the most visible advantages will be applications that can transparently share data over a network. The Rhapsody user experience—with its advanced Mac look-and-feel and dynamic plug-and-play—is intended to make computer technology a more reliable, cost-efficient and productive experience than it is today

Windows 95/NT deployment

One of the more interesting facets of the Rhapsody plan will be the capability to deploy applications to Windows 95/NT platforms This is called Yellow Box for Windows

The important difference that distinguishes Yellow Box for Windows from Rhapsody for Intel is that the core OS remains as Windows technology, and the user interface retains the Microsoft Windows look-and-feel. Apple has stated that developers won t have to pay licensing fees when bundling Yellow Box with their applications.

Apple has also stated its intention to replace the traditional Mac OS APIs with Yellow Box to ease development efforts, but this seems to be a low priority Therefore, no definitive timetable has been set for this to happen

Hardware

Not only is Rhapsody platform-agnostic, it's also processor-independent. Initially, it will run on Intel and PowerPC microprocessors and may eventually end up running on Alpha, MIPS and UltraSPARC processors. Some believe that this processor independence signals that Apple is planning to abandon the PowerPC architecture in favor of Intel. However, a rational analysis of the market conditions indicates this is extremely unlikely

First of all it wouldn't make any sense for Apple to be pouring resources into Rhapsody for PowerPC system development if it intended to jump ship to Intel. Secondly it would be suicide to desert the installed base of thousands of applications optimized for PowerPC. And thirdly, contrary to popular belief, the current PowerPC 750 (aka G3 Arthur) holds many technological and manufacturing advantages.

For example, the current 6-Watt, 67 mm sq G3 requires less than one seventh of the electrical power, and is less than one third of the size of a Pentium II while costing one third of the amount to manufacture These advantages will become substantially greater when IBM and Motorola start fabricating copper-based (instead of aluminum) G3's in 1998.

Core OS

Yellow Box gets its services from the core Rhapsody operating system, which is based on BSD 4.4 UNIX. It includes the Mach 2 5 kernel, I/O services, file systems and the networking protocol stacks. The Mach kernel will provide

Continued on page 135

TUCOWS SHAREWARE

Weather reports for your desktop
Continued from page 126
are earthquake reports, ski reports, marine forecasts hurricane advisories, U.S. weather maps, and even weather-cam pictures!

Blue Skies
Version 2 0b13
Revision date July 29 1996
Filename BlueSkies2 0b13Installer hqx
Byte size 657 573
Licence Freeware
Home page
http://groundhog sprl umich edu/blueskies.html
Author University of Michigan
This Mac-based program offers a graphical interface to weather and environmental information featuring interactive graphics and user input features Blue Skies also features a Java version—available on their home page

WeatherTracker
Version 2 2 7 (Fat)
Revision date Aug 5 1997
Filename weathertracker hqx
Byte size 847 753
Licence Shareware
Home page http://www.weathertracker.com/
This one is hands down the best World-Wide weather program for Macintosh WeatherTracker displays temperature pressure, wind speed and direction, humidity, local conditions, forecasts near-shore marine data and climatic information for nearly 1,000 cities across North America temperature and local conditions for over 100 cities worldwide.

Sun Compass
Version 3 1
Revision date Nov 5 1997
File Name suncomp.zip
Byte Size 28,327
License Freeware
Homepage http://userpage fu-berlin de/~unitax/jhame htm
Note Requires PalmOS 2.0 PalmOS 1 0 users can download version 2 4
There aren't any Pilot Picks for Weather Utilities, but you might want to load up this handy gadget if you are traveling this winter This PalmPilot/IBM WorkPad utility is a compass utility You find North by pointing the Palm Pilot at the sun and entering the exact time and date You can also use direct longitude/latitude entry choose daylight savings time choose between the northern and southern hemispheres, and at night learn how to locate the Polar Star

Fast applications
Most of the weather applications available on TUCOWS are much faster than their Web-based counterparts. If you check the weather on a regular basis, or your business is dependent on a long-range forecast, you can save a lot of time in the long-run with these useful utilities. ❑

MAC ARENA

Virtual PC or Real PC?

Connectix and Insignia duke it out in the PC emulator arena

BY PETER MILBURN

Mac OS or Windows? Windows or Mac OS? How about both—at the same time on the same machine?

Actually this concept is not new to the Macintosh. For years Apple and other manufacturers have offered PC emulation on hardware expansion cards containing Intel processors However these cards weren't as full featured as a standalone PC and tended to be expensive solutions.

Since 1988 Insignia Solutions has been offering Mac users an alternative to the PC card hardware option. Products like Soft PC and SoftWindows 95 emulate a PC by translating the Intel x86 instruction set into native 680x0 and PowerPC instructions. Although this is an inexpensive way to to run PC-only applications, performance has never been bearable on anything but the fastest Macs.

A recent development that is good news for Mac users is the entrance of Connectix Corp. (makers of RAMDoubler and SpeedDoubler) as a competitor in the PC emulator market. The competition with Insignia bodes well for future advancements in PC emulation technology

I m going to give you my general impressions of these two products with emphasis on the PowerMac gamer who wants to run PC-only game titles on their machine I'll look specifically at the issues of setup, installation and, of course most importantly performance Keep in mind that I am running these programs on a mid-range Power Macintosh 6500 running a 603e at 300 MHz with 64 MB of RAM. A faster CPU faster and larger Level-1 and Level-2 caches, and more RAM with faster hard drives will yield better emulation performance.

Virtual PC 1.0
Company Connectix
Function Pentium MMX emulator for DOS Win 3.1 Win 95 Win NT OpenStep OS/2
Requirements PowerMac with 180 MHz 603e or any 604/604e processor 32 MB RAM 256 MB hard-disk space for Windows 95
Retail price $199
Pros Inexpensive, easy installation Windows 95 included
Cons Requires fastest Macs to get reasonable level performance, uses considerable hard disk and RAM resources.

Connectix claims Virtual PC offers playable performance for popular PC games and entertainment titles on your Macintosh. The software ships with both a program installation CD-ROM and a Windows 95 CD-ROM as part of its licensing agreement. However you only require the Virtual PC disc to install Windows 95 On the 6500/300 it took only two minutes to install both Virtual PC (with a 250 MB partition) and Windows 95 This is amazing when you consider most PCs take anywhere from 20 minutes to an hour to perform the same installation.

Launching Windows 95 took about 45 seconds, but if you save the state of the program when you quit Windows 95 it launches in a mere eight seconds. On the Windows 95 desktop the video responsiveness of popup menus and closing windows was excellent however opening windows has a discernible delay when drawing to the screen For best video performance it is recommended that your video mode be set at 640x480 and 256 colors. You can set the preferences in Virtual PC to automatically do this.

Test #1—Tomb Raider My first task was to secure a playable demo of a PC-only game from the Internet. I decided that Tomb Raider was a good choice but I first had to establish an Internet connection through the Windows 95 setup I made a quick change to the Virtual PC preferences dialog box to have Windows recognize which serial port my modem was connected to. Within 10 minutes I had the eerie feeling of cruising the Internet with Microsoft Internet Explorer running under Windows 95 running on a Mac The connection speed didn't seem to suffer much from port emulation but again video drawing to the screen lagged noticeably

Anyway, I successfully downloaded the demo and unstuffed it. In Tomb Raider I had to modify the port IRQ and DMA settings dialog box to enable Sound Blaster emulation At this point it's fair to warn potential buyers of Virtual PC and Real PC that these products faithfully reproduce the PC hardware environment—so don't expect to be shielded from the arcane esoterica of PC setup procedures

I have to admit I was disappointed with the performance of Tomb Raider Even in low resolution, frame skipping is very noticeable, especially when the heroine Lara is engaged by many enemies In this situation the game is virtually unplayable.

Test #2—Havoc: This is a Mac/Windows cross-platform 3D arcade-style game that takes advantage of built-in hardware acceleration. This game really shines performance-wise on the 6500 so I had a good reference point for comparison in a Windows environment

Installation from CD-ROM went without a hitch, but when I launched Havoc I couldn't seem to control my all-terrain vehicle from the keyboard. In the meantime enemy vehicles were circling and taking potshots at me Finally after about two minutes of frantically tapping on keys my vehicle suddenly started moving There is obviously a problem related to input under certain circumstances Virtual PC doesn't take advantage of 3D accelerators and their texture mapping so graphics were obviously more crude Skipped frames were far less noticeable than in Tomb Raider. In all, this game is moderately playable under Windows 95 emulation

Test #3—Triple Play I installed a demo version of the baseball simulation called Triple Play When I launched the game the splash screen displayed itself, then the screen went black. I waited for over five minutes for some indication that something was happening, but to no avail I was forced to do a hard reboot so this game is definitely unplayable for some reason.

Real PC 1.0
From Insignia Solutions
Function Pentium MMX emulator for DOS
Requirements PowerMac 24 MB RAM 50 MB hard disk space for MS DOS
Retail $115
Pros Inexpensive easy installation.
Cons Requires fastest Macs to get reasonable level performance consumes considerable hard disk and RAM resources if Windows 95 is installed.

Insignia's product is marketed strictly as a DOS emulator but it is possible to install Windows 95 from CD-ROM on top of RealPC. It took about 45 minutes to do this as opposed to only two minutes for Virtual PC To be fair, Insignia's real competitor to Virtual PC is SoftWindows 95, so I'll avoid drawing comparisons until I test the latest version of that product The only comparison I'll make here is that subjectively, the video redraw speeds on the Windows desktop did not seem to be any faster or slower than with Virtual PC.

One of the annoyances of RealPC is that it requires the user to get involved in what I like to call "geek tweak." Depending on how much memory you assign RealPC Insignia lets you optimize the size of the memory partition that the Pentium emulator runs in You must make the adjustment yourself by dragging a slider control in the RealPC Setup dialog box. I prefer software to automatically take care of details like this.

Installation took me about two minutes on the 6500/300 As a bonus (and a technology demonstration) RealPC comes bundled with a CD-ROM containing over a dozen early versions of classic DOS arcade and 3D action games. Two factors have to be considered when

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24X EIDE INT CD-ROM
15" Tower Case w/230W PS
14" N/I L/R Monitor
104Key Win95 keyboard
Genius NetMouse w/Pad
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Intel HX Chip 512K Cache
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16 bit SB Compatible Audio
1 44 Floppy Drive
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24X EIDE INT CD-ROM
15" Tower case w/230W PS
14" N/I L/R Monitor
104Key Win95 keyboard
Logitech 2 button Mouse w/Pad
80W Multimedia Speaker

$1045

P200/P233MMX--- $1385/1295

Pentium ATX System

Pentium 200 MMX CPU
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Intel TX Chip 512K Cache M/B
ATI 3D Xpression 2MB Video
Sound Blaster AWE 64 PnP
1 44 Floppy drive
Quantum ST 2.1 GB Harddrive
24X EIDE INT CD-ROM
17" Convertible ATX Case w/II fan
15" N/I L/R Monitor
104Key Win95 keyboard
Logitech 3B Mouse w/Pad
80W Multimedia Speaker

$1575

P166/P233MMX- --$1455/1705

Pentium II System

Pentium II 233 CPU
32 MB SDRAM
Intel 440LX MotherBoard
ATI 3D Xpression 2MB Video
Sound Blaster AWE 64 PnP
1 44 Floppy drive
Quantum ST 4.3 GB Harddrive
24X EIDE INT CD-ROM
17" Convertible ATX Case w/II fan
15" N/I L/R Monitor
104Key Win95 keyboard
Logitech 3B Mouse w/Pad
80W Multimedia Speaker

$2160

P 1 266/300----$2340/2630

CPU

Pentium 166/100	call
Pentium 166/100 233MMX	call
Pentium Pro 180/200 256K1	$250/$620
Pentium II 233/266/300	call
AMD K5 133/166	$115/$140
AMD K6 166/200/233	$195/$300/$400
Cyrix 6x2 166/200/233	$195/$225/$430

Memory

1MB/4MB 30pin SIMM	$12/$25
EDO 4MB/8MB/16MB 72pin	$ 75/$225/$
EDO 4MB/8MB/16MB 72pin	$22/$35/$55
EDO 32MB/64MB 72pin	call
PARITY 4MB/8MB/16MB 72pin	$30/$54/$80
PARITY 32MB/64MB	$150/$270
DIMM 8MB/16MB 168pin	call
DIMM 32MB/64MB 168pin	call
ECC DIMM 128MB/64MB	$195/$270

MotherBoard

ASUS TX97XP/P2A	$115/$210
ASUS TX97/TX97E	$210/$240
ASUS TX97X/TX97XE	$225/$325
ASUS P2L97/P2L97S	$215/$390
ASUS Intel P6 440FX	$490
ASUS Intel PII P2L97/100	$314
Intel Mach-1 ATX MMX	$155
Intel Venus Pro 440FX	$180
Intel LT430TX	$160
Intel AL440LXU/AL440LX	$200/$360
Gigabyte 586 ATV/VX/HX	$125/$135/$180
Gigabyte 586 TX2/TX3	$100/$185
Gigabyte 586 AT/X2/AT2	$160/$185
Gigabyte 686 MX/FX	$265/$365
Gigabyte PII BX/LX	$355/$365
Tyan S/1571/S1572	$185/$185
Tyan Tomcat/Tiger-Pro	$315/$400
TyanTahoe II S1466/S1466D	$300/$420
Asus ASP3/ASP3	$135/$260

Video

Cirrus Logic 5446 1MB/2MB	$50/$60
Cirrus Logic 5446 2MB	$63
S3 Virge 2MB/4MB	$40/$65
Diamond 3D Monster	$200
Diamond Stealth 64 2MB/ EDO	$70/$99
Diamond Stealth 2MB VRAM	$145/$195
Matrox Millennium II 4MB(mem)	$710/$320
Matrox Mi lenn um II 4MB(cmd)	$135/$375
Matrox Mystique 2MB (mem)	$130/$130
Matrox Mystique 2MB (cmd)	$145/$165
ATI Graphic Pro 4MB	$200
ATI 3D Pro PCI/TV 2MB	$110/$135
ATI 3D Xpression Plus 2MB	$190/$120
ATI TV Tuner AMC	$130
ATI all in Wonder 2MB	$200/$320

Modem

USR Sportster 33.6/56 voice int.	$120/$160
USR Sportster 33.6/56 ext.	$190/$270
Sierra 33 6K voice int	$175
Acer 33.6/56 voice int.	$80/$125
Powerstream 33 6/56 int.	$60/$130

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WD 1 6/1 7/2 5GB IDE	$210/$320/$255
WD 3 1/4 0/5 0GB IDE	$270/$330/$530
Quantum ST 2.1/4.3GB IDE	$270/$250
Quantum ST 4.3GB IDE	$315/$430
Seagate 2.1/3.2GB IDE	$180/$300/$280
Fujitsu 1 7/2 0/3 2GB IDE	$230/$280/$330
Fujitsu 4 3/5 7GB IDE	$370/$430
ITS 1.3/2.1/3.2GB IDE	$170/$210/$255
Samsung 2 1/2 5/3 0GB IDE	$225/$245/$270

Sound Card

Sound Blaster 16 PnP	$80
Sound Blaster AWE 64	$135
Sound Blaster AWE64 GOLD	$245
Opti 931	$30
Acer FX 3D	$30
Acer AW32 3D PnP	$80
ESS1868 16 bit ID	$31

CD-ROM

Toshiba 2X IDE	$93
Toshiba 24X IDE	$120
Panasonic/Creative 24X IDE	$135
Panasonic 8X IDE	$75
Acer 20X IDE	$100
Acer 24X IDE	$100

CD-Writer

HP Surewriter 7100e Plus IDE	$530
HP Surewriter 7100e Parallel	$635
Panasonic 6x/2w SCSI	$700
Panasonic 4x/2w CTRL/SFT	$545
Creative 4020 CTRL/SFT	$390
Yamaha 6/0 SCSI Int/ext	$900/$1030

Zip Drive

Iomega Zip 100MB SCSI ext.	$185
Iomega Zip 100MB Parallel ext.	$180
Iomega Zip 100MB IDE int	$150
Panasonic Zip 100MB IDE int	$151
Panasonic 1.3-120 Floppy Drive	$100

Jaz Drive

Iomega Jaz 1GB SCSI int/ext.	$410/$635
Iomega Jaz 2GB SCSI int/ext.	$799/$99

Tape Drive

HP T3000 2GB Int/ext.	$230/$370
HP T4000 4 8GB Int/ext.	$370/$530
HP T4000 s 8GB Int/ext.	$310/$390
Conner 800MB Tape Backup	$200

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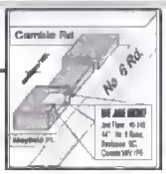

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MAC ARENA

Rhapsody sings siren song

Continued from page 130

services such as pre-emptive multi-tasking, multi processing, memory protection sparse virtual memory threads and Interprocess communication

When the unified release ships it will most likely contain the Mach 3 0 (or more recent) microkernel instead of the monolithic kernel in version 2 5 This means Rhapsody will become a 100 percent modular operating system from floor to ceiling The beauty of a modular core OS is that it can be easily updated without wreaking havoc on applications and all of the system services that they rely on.

Java

Java is currently a popular programming language due in its promise of "write-once deploy everywhere " But it is running into some problems of late Complaints include poor performance, immature development tools and lack of a consistent interface convention However Its most serious problem is the proliferation of Java Virtual machines on mixed platforms that implement their own proprietary mechanisms.

Rhapsody Intends to leverage the popularity of 100 percent pure Java by integrating it (along with Objective C and C++) as a programming tool that can directly access the advanced Yellow Box libraries As a matter of fact, developers will be able to mix-and-match Java Objective C and C++ code as they deem appropriate In one fell swoop this strategy solves the problems of performance interface and lack of a mature programming environment And of course the Yellow Box will ensure that Java programs run as expected on all platforms

With this strategy Apple hopes to convert thoulgions of Java programmers that want to see the language fulfill its promise Java could end up being the dark horse that would see Rhapsody attain a position as a pre-eminent developer platform

Blue Box

This is a Mac OS compatibility engine that will only exist on Rhapsody for PowerPC. It will enable Mac users to migrate to Rhapsody while at the same time bringing their Mac OS applications with them. Blue Box is not an emulator like Virtual PC or SoftWindows It is the Mac OS running directly on top of the Mach kernel and it is intended to offer performance at least equal to that of the Mac OS 8 experience on the same hardware It will also run as its own process so that a crash will have no effect on Rhapsody other than having to relaunch Blue Box.

Thus far compatibility is reported as being excellent, as long as any Mac OS application that you use doesn't try to access hardware directly Developers who would like to easily migrate their Mac OS applications to Rhapsody can use a Metrowerks product called CodeWarrior Latitude

Advanced Mac look and feel

This is the part of the Rhapsody that is the least publicized at this time Recently, there was a document leaked onto the Internet that conceptually discussed Rhapsody's planned user interface Essentially, it will be a superset of the Mac OS "look and feel" that will be both scalable and extensible Multiple users who share the same computer will be able to log onto their own desktop configuration that is tailored to their requirements and organizational needs

Extensions—sometimes the bane of Mac users—will no longer append themselves to the core OS where they can potentially cause conflicts Instead, they will be launched as separate applications so system stability is never compromised Rhapsody will also improve on the Mac's true Plug and Play capabilities by making them dynamic. This means no more restarts after Installations

In any case Information is still sketchy as far as user interface goes, so we'll have to wait for the unified release in mid-1998 to completely see what Apple has in store

The last word

Because Rhapsody is such a radically different approach to programming, and is being touted as the "holy grail" of multi platform capability, it is creating intense interest in the developer community However, Apple still faces many stiff technical challenges in implementing the complete developer feature set and end user look and feel for its final version If Rhapsody's promise can be fulfilled, it will shape up to become both a formidable competitor to Windows NT and a ticket into the world of enterprise computing. ❑

Peter Milburn is a consultant with Elite Systems Support located in Calgary Alberta. He can be reached on the Internet at nilm@cadvision.com

■ TRAINING

Netrepreneurs have to learn to survive, say experts

BY NATHAN MALLETT

To many under-employed over-educated twenty somethings the Internet revolution of 1995 and 1996 was a like a gold mine The virtual Klondike of business opportunities that presented themselves meant anyone who could teach themselves the fundamentals of hypertext markup language (HTML), the programming format that allows Web pages to be built could make a small fortune building sites for businesses that were itching to get online

Two years later the frontier may be closing to many of these early Netrepreneurs as the demand skyrockets for professional graphic artists and computer programmers who can build the more visual content-rich virtual environments the widening population of surfers are seeking

The type of static, simplistic Web page that was in demand only a few months ago is now old hat and it seems everyone on the Internet is continually searching for the latest visual and interactive effects to draw crowds.

And since technology waits for no one, especially when it comes to the Internet, the freelance developer of last year is going to have to get with the times if he or she wants to survive in the next era online

One survivor is Daniel Rostenne At 26 he is the president of NTS a Toronto-based provider of Internet training and solutions. Back in 1994 the Internet pre-history to many Rostenne fresh with a degree from the University of Toronto, started offering basic technical instruction to the providers of Ottawa's FreeNet a community modem accessed bulletin board that offered PCers a gateway onto the then cryptic, text-based Internet

Now he runs his own company that builds Web sites for small and not so-small businesses and organizations. With a growing roster of clients and employees, his next plan is to open offices in Chile and Brazil

"I didn't take any formal training to get into this" said Rostenne "I just sat down and taught myself because I knew that I didn't want to get a real job"

■ TRAINING

It was these early dorm-dwelling HTML-gurus who ushered the first wave of Netizens onto the Web and created for themselves a thriving multi million dollar industry

Now millions of home pages, and dollars later the Web has matured and the competition for the attention of surfers has become big business

"The demand for a Web page at all costs has been replaced with the demand for the most professional looking site" said Rostenne "Gradually over the past year, really forward thinking companies started doing more than just HTML.

Very often the desired Web effects which demand knowledge of other more complex programming languages and skills than HTML are now beyond the capacity of the small private self taught Web contractor of last year ➤

Virtual PC or Real PC?

Continued from page 132

evaluating performance of DOS-based games versus Windows 95 games.

Firstly the lower OS overhead of DOS will help boost emulation performance Secondly the DOS games on this disc have a much lower video resolution (often employing pixel doubling) which of course, enhances video performance in the emulator

Test #1—Rise of the Triad Dark Forces Doom Descent I All of these first person action games were highly playable with the exception of Descent Descent became difficult to control when I was attacked by more than one ship All of the sound effects were operational In Dark Forces, but the music would not play Subjectively Rise of the Triad had excellent video performance Dark Forces and Doom were very good performers as well.

Test #2—Jazz Jackrabbit, Raptor These 2D arcade-style games obviously don t pose as much of a challenge to the emulator as the first-person 3D shooters Performance on these games is eminently playable on the 6500/300

Summary

Virtual PC and Real PC are undeniably impressive intellectual and technological achievements. However I still have some reservations about these products being an ideal solution especially for high-end PC games You'd obviously be better off to purchase the Mac version of a game if it's available

PC emulation in software is not a panacea—at least not yet But keep in mind that these are the first versions of these products, and competition between Connectix and Insignia will push the envelope on this technology Also, the imminent arrival of Gossamer Macs with their phenomenally powerful 750-based processors signal that it won t be long before software emulation finds its way into the consumer mainstream In the meantime the Mac continues to come ever closer to the "holy grail of computing " Stay tuned. □

Peter Milburn is a consultant with Elite Systems Support located in Calgary Alta. He can be reached on the Internet at elite@cadvision.com

Contact:

Connectix, Web site: http://www.connectix.com

Insignia Solutions, Web site: http://www.insignia.com

■ TRAINING

"Just knowing HTML made you a valuable commodity a year ago," said Rostenne. "Today it's still nice, but it really doesn't get you anywhere."

According to Rostenne, formally trained computer programmers and graphic artists, fresh from colleges and university are rapidly replacing the amateur self-taught entrepreneur for businesses that are seeking leading-edge sites.

Online commerce, more secure sites and multimedia have become common on the Web and building sites with features like these is far beyond the skill-sets of many amateurs who were building sites even last spring.

"Many of the first freelance HTML programmers have been either weeded out of business or sent back to school for more training," said Rostenne.

But according to the experts, two strategies can work for the young Netrepreneur who plans to make a living building other peoples' Web sites.

One approach lies in becoming a well-rounded Jack- or Jane-of-all-trades who knows a little bit of everything about the new Internet programming technology.

Joyce Wayne, the director of Sheridan College's New Media program offered at the Oakville, Ont. campus, has crafted an entire one-year curriculum on this concept.

The course, an evolution of the school's print journalism diploma program, is engineered to produce graduates ready to enter the online workforce.

"We try to produce a well-rounded employee," said Wayne. "What is needed out there is someone who knows HTML, but also has an eye for design, as well as an understanding of marketing over the Internet."

Has Sheridan's program worked? Some of the graduates would say so.

Dave Moore graduated from the program a year and half ago and was hired right away by CANOE, a national online news service.

"I was picked up before the ink had even dried on my diploma," said Moore. "They needed someone who had an eye for design and who could present information, in this case news, over the Web, not just someone who knew the programming."

Rostenne agrees that survival lies in training, but says becoming an expert in one small field of the Web design process, rather than knowing the basics of many areas, could be another successful strategy for anyone wanting to make a career out of the Internet.

"There is a need for people who know Java-scripting, Pearl and CGI, just like there is a need for people with an eye for design and for people who know how to market a site," said Rostenne. "I think it's a good idea to be familiar with the wider picture, but it helps to get to know one of these areas very well."

Rostenne says comparisons can be made between working in an established medium and this emerging one.

"If you want to work in television, there are a ton of things you can do—you can act, work the cameras, produce, or promote," he said. "That is what we are seeing in the Web now. People are becoming professionals in specific areas of the process."

Wayne echoes these sentiments and offers some advice to those trying to earn a living online.

"The Web has been established, but now we are in an age of refinement," she said. "The number of people out there turning to the Internet for information is staggering and to really succeed at drawing the audiences it takes formal training and time." ❑

Nathan is a freelance journalist and works full time for a series of electronic trade publications in Mississauga.

USER GROUPS

ATTENTION USER GROUPS: Send in your listing (maximum 120 characters) for the January issue by Friday, December 26, 1997. Submissions run for one month only at the need edition. *The Computer Paper* reserves the right not to print submissions which are deemed unsuitable.

ACM/SIGGRAPH Computer Graphics, 2nd Tuesday, at 420 Hamilton St. Call Tom Berryhill at 734 3476

ADAM OWNERS! Vancouver Island Sun or ADAMpatches (Vista) newsletter: meetings suspended. Contact David Colley #17 896 Berwick Rd. Qual cum Beach, BC V9K 1N7 (604) 752-1984

ALI 2600 VANCOUVER USER GROUP Meeting are 1st Friday of each month at Pacific Centre. Mail by payphones in food court, match at Dunsmuir at Granville 4pm to 9pm. Starts early to catch the evening shift 2600ers. For more information contact Steve via email at <sage@vanic.wimsey.com> or <sage@cadbee.ecom.com>

AMIGA USER GROUP (PalterAmiA): For meeting times and place call Ray Warman 599-7199 or Robert Hardy 942 6364 BBS numbers 231-0363

APPLES & C COMPUTER SOCIETY A User Group for Macintosh and Apple IIs. Macintosh meetings are on 3rd Wednesday of each month at the York House School in Vancouver at 7 p.m. Novice and other special interest groups are held m-f-month. Apple II meetings are on 1st Monday of each month at 7 p.m. at the Century House in New Westminster. For further information call 437-9035 or 299-9537

ATARI USERS! Ventura PO Box 3814 Main Post Office, Vancouver BC V6B 3Y9 BB Sutherland 948-1450 Don Halton 433-8066. Meets 2nd Wednesday 7:30 p.m. Hastings Comm Ctr 3096 E. Hastings.

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B.C. VAX/VMS Local Users Group (BCVAXLUG) provides a forum for the professional growth and education of its members through the exchange of solutions, ideas, and questions. User group meetings are held the 3rd Wednesday of every odd month at 6:30 p.m. with location to be advised. For further info please call voicemail 276-6966

BIG BLUE AND COUSINS PO Box 5308, Station B, Victoria BC V8R 6S4 General meeting last Wednesday 7:30 p.m. at U Vic Elliot Bldg. Lecture Theatre 168. Also, special interest group meetings. 382-2934

CANADIAN INTERGRAPH USERS GROUP CONFERENCE September 8-11 1998 Olympic Mountain, Mount Seymour, OR. Theme: The Open Road". Contact Laura Bierman, Intergraph 2112 Memorial Dr. SE, Calgary AB T2A 7R6 Voice (403) 569 5562 Fax (403) 569-5881 e-mail lbierman@ingr.com

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FOXSOFT EDMONTON'S FOXPRO USERS GROUP-second Tuesday, 7:00 pm Grant MacEwan City Centre Campus, East Wing Room C-137/C 135 10700-104th Ave Contact: Ken Rayner at 437-0315 or Robert Stuart at 469-3712 (days) Info Bulletins on BBS 457-4106.

GENERIC CADD USERS GROUP Contact. Frank Zander (604) 582-8083 BBS 294-8297 (9600 n,8,1)

INDEPENDENT COMPUTER CONSULTANTS ASSOCIATION OF BC The ICCA is a non-profit association of consultants who provide services in the field of information technology. The objectives of the ICCA are to provide a forum where consultants can network with each other exchange ideas, and improve their business and computer skills. Monthly meetings with speakers. For further information contact us at: Suite 720-938 W Hastings Vancouver,BC V6C 1K6 Tel:(604) 734 2747 Fax: (604) 738-9540 or E-Mail:icca@sfu.ca WWW http://www.sqs-bc.org/icca/

LOTUS NOTES see "Pacific Notes User Group"

MACWEST COMPUTER SOCIETY Meetings for members and visitors include Shareware copy sessions, software and hardware demos, and Q & A sessions. If you use a Macintosh, check out our General meetings. 2nd Wednesday of each month. Beginner's meetings 3rd Wednesday of each month 7:30 pm Surrey Creek Golf & Country Club 152nd Street Surrey Web site http://www.macwest.org/users/groups/index.html MacWest First Class BBS modem number 588-9583 Login as Guest/guest. Messages and information on at 294-9630

MS ACCESS TECHNICAL USER'S GROUP Call Greg Hind at 434-0262, from 8:00 to 9:00

NANUGS (Northern Alberta Novell Users Group Society) meets quarterly at the CompuSmart store on Mayfield Road. For information, please e-mail to nanugs@freenet.edmonton.ab.ca or phone Mike Street (403)487 7866

OBJECTS USER SOCIETY See Branch Columbia OpenStep Group (BC O G)

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PACIFIC NOTES USER GROUP (PACNUG) Lotus Notes users meet the last Wednesday of each month (except August and December) 5:30pm at IBM Contact Dolores Baker at 588-2141 or dbaker@ca.ibm

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POWER BUILDER User group being formed. Meetings are planned for 3rd Wednesday. To enroll call Perform System Developers at voice mail 604-264-0247

SQL SERVER User group being formed. Meetings are planned for first Monday. To enroll call Perform System Developers at voice mail 604-264-0247

TI 99/4A COMPUTER B.C 99er Users Group every Thursday 7:10 p.m. For information, call Ron. 522-2608.

TEENS IN VANCOUVER USER GROUP For teens under the age of 16 interested in doing computer related projects/ programs, WWW programming, games anything! The main goal is to share computer knowledge and to make friends. If there are any homeschooled interested that would be great! If interested, please call Brian Max at 986-3836.

THE TOPKIDS CLUB A user group for tots, teens and parents. Monthly meetings and family focused with software/hardware demonstrations, guest speakers. Windows and Mac tips and online demonstrations. A BBS is available to members. Call Garland Coulson 279-5439 or email garland_coulson@hotmail.com

VANCOUVER AUTOCAD USERS SOCIETY 1st Wed of the month 7:30 p.m. B C I T Bby Campus Bldg SW5 Room 1850 Contact: Frank Zander (604) 582-8083.

VANCOUVER DELPHI DEVELOPERS ASSOCIATION meets once a month at the Upper Distribution Branch rented Office in East Vancouver. The meeting is usually on the 2nd or 3rd week of the month on Tues or Wed depending upon availability of facilities. The purpose of the group is to provide a common and regular forum for Delphi developers to get together and discuss Delphi related issues. All meeting notices and sent via fax or e-mail. Please contact Michael Li at mli@mincas.com, fax (604) 736-5866, or tel (604) 736-5868 ext. 738

VANCOUVER ENTERPRISE FORUM 432-8261

VANCOUVER FOXPRO USER GROUP (VFUG) September-June 2nd Tuesday at 1900 hours 200-1177 W Broadway Info Line @ 736 2822, BBS 231-8785 and e-mail to jrylan@uniserve.com

VANCOUVER GEOWORKS USERS CLUB For further info please call 883 7490 (eves)

VANCOUVER GEOGRAPHIC INFORMATION SYSTEMS USER GROUP ▶

USER GROUPS

Meetings are held on the 1st Wednesday of each month, September through May at B.C.I.T. Town Square Room "C" at 7:30pm. Contact Dwight at 940-1518 for all information.

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VANCOUVER NETWARE USERS GROUP (VNUG) is an official user group recognized by the Novell Users International Assoc. and supported, in part, by Novell. Meetings are held on the first business Monday of every month at The Stanley Park Drive Pavilion. All aspects of the networking environment are discussed and presented with emphasis on the Novell network operating system. The workshop begins at 4:00p.m., buffet dinner at 6:00pm at 7:00pm is a Q&A session followed by a presentation ending at around 9:30pm. Member, non-member and student pricing applies to the workshop and/or dinner-presentation. For further information or meeting topic announcements call our voice mail at 689-VNUG (689-8684)

VANCOUVER OS/2 USER GROUP Attended by OS/2 gurus and novices alike and well supported by IBM. The large and lively meeting is held on the first Wednesday of each month at the BC Tel Building, 3777 Kingsway Burnaby and meet at 6:45 pm. Join us for an informal workshop beginning at 11:30 am on the first and third Saturday of each month at Doppler Computer Superstores 486 W 8th Ave., Vancouver. Contact: Jim Shewchuk 876-4789

VANCOUVER PC USERS SOCIETY (VPCUS)- Meets every Thursday 7pm at Science World, members free. $6 guests. Excellent Q&A session & feature presentation. Our mission is to educate and inform our members and the general public on the current and future issues in personal computing and to provide a social contact for the business, educational and personal use of microcomputers. We offer on disk newsletter, educational seminars, special interest groups (see separate VPCUS SIG listings), and more. Call 290-0600 for details and schedule.

VANCOUVER SMALLTALK USERS GROUP (VSMUG) is a group of individuals and organizations interested in object-oriented analysis, design, and programming with a particular emphasis on Smalltalk. Primarily for individual developers to meet, share ideas and experiences, discuss technical issues and learn cool stuff. It's designed not to be a forum for sales pitches from vendors. RSVP VSMUG@vcn.BC.CA or visit our web site at http://nucy.csc.uvic.ca/~terfb.

VANCOUVER WINDOWS NT USERS GROUP (VANTUG) Meetings are held on the 3rd Tuesday July Sept, Nov. at 6:30pm. Please consult our website for further information on agenda items, membership. Details or meeting locations http://www.vantug.com Email Nancy Pearce, VANTUG President at Nancy@televues.bc.ca

VISUAL BASICS USERS GROUP is for users, developers and consultants creating consumer programs and client specific applications. Presentations by industry experts. Meets 2nd Thursday of each month at 6:30pm at Vancouver Film School,400 Homer St(&Hastings,above Wet Cafe) Vancouver,BC Contact 24-8800 or sales-spice@bc.sympatico.ca for details of upcoming meeting.

VISUAL OBJECT DEVELOPERS ASSOCIATION OF VANCOUVER For information on next meeting, contact John Klewesaat (604) 430-8216 fax: (604) 431 3840 CIS 72120,3156

VPCUS CLAR ON TOPSPEED SIG- Clarion is a full-featured industrial strength DOS &Windows application development tool for superior high level language and reusable templates produce compilable code and tight EXE's that run fast and are royalty free. The lively SIG attracts a range of participants from seasoned professional programmers to new users and the curious. Meets the 2nd Tuesday of every month. Contact John Galka, 736-7702.

VPCUS DBUG SIG (Data Base Users Group) Emphasis is on solving problems of data management with special reference to Paradox. Bring a clean 3.5 inch disk to pick up goodies from the meeting. Meetings for the next few months will be informal and held at a local pub. Contact Web Frowns, 399-3093.

VPCUS Educational Seminars — Members $6, Non-members $15. Various topics, times and dates. Contact Gwenda Steward, 737-8674

VPCUS HTML AUTHORING SIG- This SIG is a good place to come for informal discussions with other HTML developers, or to get advice on building business and personal Web pages. Topics include graphics and HTML, plug-ins, the browser wars, jumbo, connectivity issues and marketing on the Internet. Both novice and advanced HTML authors are welcome. We meet on the 2nd Tuesday of each month. Contact Brenda Delaney: bdelaney@unbug.ubc.ca or Virginia Green virginia@arts.ubc.ca for meeting info,and to get our email list.

VPCUS Internet SIG- New to the wild high way? Get to know the internet and the Web with an experienced guide. Contact Joe Thompson for details 685-8945.

VPCUS LINUX SIG-Linux is the free alternative to Windows, DOS,and OS/2 Its is the tried and true Unix OS configured to run on PC's. The system is open, full featured, robust, and getting better all the time. Most web servers run on Linux.* See what makes it so attractive to those who know. Meets on the 3rd Monday of each month. Contact Stan Clausson at 532 6846 or email clausson@direct.ca

VPCUS NETWORKING SIG- This is the place if you are a network administrator and you need a break from beating your head against a wall or want to relate with people who actually care what you're talking about. Come and share Novell glory stories,tips, tricks and support ideas. Currently on hiatus, we're looking for volunteers either prior to getting this SIG going again. Contact Brenda Delaney:bdelaney@unbug.ubc.ca, or fax 224-2143 for more information

VPCUS WINDOWS PROGRAMMING SIG-For programmers and intermediate to expert Windows users who are interested in PC programming particularly in C, Access, Delphi,VB,java,etc. Meets on the 2nd Tuesday of most months. Contact Casey Hawthorne at 879-2703,or email: caseyh@telus.net

VPCUS WINDOWS USERS SIG-For Windows users at all levels. Learn and share tips, techniques,pitfalls, configurations, and optimizing strategies for hold using WIN'95. A new SIG to meet on the 3rd Wednesday of the month. Contact Casey Hawthorne at 879-2703, or email: casey@telus.net

VPCUS WORDPERFECT SIG -Participants share tips and tricks of this wonderful office product. Contact Holly Rivers at 731-0038, or email: hollyr@interaccess.com

Help Desk Institute Local Chapter An organization promoting training,education and a networking forum for Help Desk Professionals. These people who help novice computer users with hardware or software problems. For more information on membership. Please send your e-mail to Karen Yuen at: KYUEN@VSE.CA

CALENDAR

JANUARY

ICCA Dinner meeting January 27 1997 (Tuesday) Guest speaker. Networking opportunity. For more information, call 734-2747 or browse http://www.cca-bc.org/cca/events.htm. Non-members welcome

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THE LAST BYTE

An embarrassment of riches

The good news—and the bad news—is, there's a seemingly infinite number of new mass storage technologies for 1998.

The nice thing about standards is that there are so many to choose from

JEFF EVANS

This old computer industry joke was never so true as it is today, especially in the PC mass storage field.

When IBM originally invented its first broom-closet-sized 10 MB "hard file" ("hard drive" to non IBMers) it really wasn't clear who if anyone would ever need 10 whole megabytes of digital storage. All that data! The equivalent of 4,000 typewritten pages! Wow! As it turned out, just about every PC user would eventually find a need for a much larger capacity digital filing cabinet on every PC.

Looking back

The standard storage technology for today's average PC user is still a hard drive and a 3.5-inch floppy drive, a combination that has been virtually universal on Windows PCs and Apple Macs since 1990 or even earlier. However, even those old standbys have seen rapid change.

The average PC hard drive has jumped in capacity from about 40 MB in 1990 to over 1.2 GB today. The speed of the drives also increased by at least a factor of three over those eight years. The current interface standard for hard drives, Enhanced IDE, didn't even exist back then.

The 3.5 inch floppy (originally double density 713KB on the PC) drive still had to compete with the 5.25-inch floppy format back in the early 90s, and for a couple of years, most PCs came with dual 3.5 inch and 5.25 inch floppy drives.

The 5.25-inch 1.2 MB floppy is virtually forgotten and also forgotten are its predecessors such as the 720KB, 360KB, 160KB 5.25 inch floppies, and even farther back in the mists of time, tape cartridges, and punched cards.

One sobering problem with dead mass storage formats is that when they die, they can take your irreplaceable data with them. For example, let's say you happen to have a particularly precious letter that you once wrote to your Aunt Martha, stored on a really ancient 160KB diskette. This diskette was compatible with your old Z80 CPM computer (we're talking state of the art, circa 1983) you might find it impossible to determine if the data is still present on the disk, much less retrieve it onto your current PC. Changes in mass storage technology can create huge problems of backward compatibility, even as they offer new opportunities for bigger, faster and cheaper devices.

What to do?

We live in the present and we have to use today's tools with the knowledge that they too will pass out of use surprisingly quickly. At this year's Comdex, a whole new generation of seductive new data storage technologies presented themselves, offering new horizons in mass storage and new headaches in compatibility. We'll look at some of the new options, and speculate about their appeal. The first thing I'd recommend, though, is to carefully analyze why we need more storage (if we do) and only then consider how to get it.

Why do we need more mass storage?

To put it simply, even an ordinary PC user needs more than a hard drive can offer if he or she is concerned about digital video, audio, graphics, games and backup. The problem is seldom a lack of capacity for mainstream applications.

Even today's bloated operating systems, office suites, and graphics software, though much more demanding of storage space, only occupy a fraction of a current multi gigabyte hard drive. If a PC or Mac user has an older, smaller drive, and needs a few hundred megabytes to load Mac OS 8 or Microsoft Office, the solution is simple. Spend a few hundred dollars and buy either a second or replacement hard drive. The average PC user, relying on a few programs for most of his or her daily computing tasks, can probably stretch the hard drive/floppy drive model to meet ordinary needs.

Things get complicated, however, if the PC user gets interested in those storage intensive applications such as video, audio and pro-level graphics. Especially in the case of video. 'VHS-quality' or better full motion video can take up several megabytes of space per second of video. Very quickly, even the largest hard drive can be filled up.

If the data on the PC is mission critical—business files, or even school assignments—it should be backed up. Again for many home or school purposes, floppies may do the trick. However if large amounts of files have to be saved, they should be backed up on some other mass storage medium than the hard drive for safety's sake.

This year one of the most outstanding trends at Comdex was a host of new mass storage devices. The hard drive makers rolled out Enhanced IDE and SCSI hard drives with capacities up to 47 GB per drive and storage arrays, mainly for the server market, that offer almost unlimited capacity. Ironically, bigger is sometimes better in terms of moving critical data over to a new storage technology. A professionally managed networked mass storage system can often shift files over the network quickly and easily.

For an individual PC user however, a personal cartridge drive is increasingly cheap as well as affordable. Iomega's Jaz drive which originally came in a 1 GB format, has been supplemented by a 2 GB version which is backwards compatible to the old 1 GB cartridges. Iomega is so widely used that it is probably the best bet at the moment for a mass storage format that will be supported for some time to come.

Recordable CD drives or CD-R, have become popular, but face obsolescence as the original 650 MB CD-ROM format gives way to the new DVD-ROM format which has storage capacity between 4.7 GB and about 14.7 GB. The logical mass storage device for the DVD age is the rewritable DVD drive, which will allow users to create their own DVD disks that will be readable on compatible DVD-ROM drives.

The biggest caveat with rewritable DVD drives is that they don't yet exist as widely available, standardized products. According to manufacturers like Creative, DVD-RW (Digital Video Disk-Read/Write) disks may not be readable on today's current DVD drives. They may need minor changes in the hardware of the next generation of DVD drives to ensure compatibility. Moreover DVD-RW is but one rewritable DVD format being proposed. Pioneer has a different format called DVD/RW while Matsushita and others are evangelizing the DVD-RAM format.

Flip-flopping on floppy

Even the lowly floppy drive is being assailed by competing and incompatible successors. Sony has announced a new 200 MB High Capacity Floppy Disk (HiFD) system. This will compete with the LS-120 drive, which is compatible with a regular 3.5-inch floppy diskette as well as a 100 MB diskette; is an attractive option, since it does double duty as a floppy drive and a mass storage recorder. However, there is always the question how long a mere 100 MB per disk will attract customers, the LS-120 could fall by the wayside fairly quickly.

New and old media

A new storage technology, magnetoresistive or MR, is the basis for the new Castlewood ORB 2.16 GB drive. The ORB seemed especially

impressive with a high 12.2 MB/sec data transfer rate, and an astoundingly low price (US$199) for the drive, and $30 for the cartridges. A contender to watch with interest, to see if the performance lives up to the advance billing.

From Danmere, a U.K. based company, comes the Backer 32 PC tape backup system. This technology offers as much as 4 GB of data storage for as little as a couple of dollars. It uses regular video tapes to store data, employing either an external tape drive kit (US$89) or an internal card (US$69) which connects to a consumer VCR, to accomplish the recording of computer information on videotape. An ingenious device, it might be a good

idea to see the results of some serious testing before buying. Danmere claims sales of tens of thousands of units to satisfied customers, so it may well be worth a try.

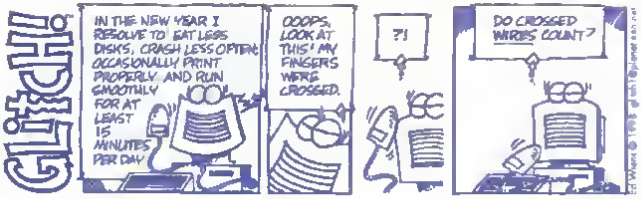
Other options

For the mobile or handheld computing market, other super-compact mass storage devices are being developed, such as the REX PC Companion, a PCMCIA card that stores database information and allows the user to access it through a little LCD touch screen. It weighs next to nothing and can be tucked into a wallet or pocket, and used without need for a palmtop or notebook PC. It can be synchronized with a PC database simply by inserting it into a PC Card slot.

SanDisk makes a new line of ultracompact flash memory cards, which have the advantage of compactness, lightweight and low energy consumption, ideal for handheld PCs and other devices such as digital cameras and other portable devices.

Looking ahead

If the information on a mass storage medium is of any long-term use, part of the decision to buy a particular product should be a plan for migrating off the device. In general, this tends to favor established brand names, which may be more likely to provide 'sunset' support to their old products. Ideally, even when a mass storage device reaches the end of the trail, the data that it has faithfully preserved can be passed on to a new generation, with a minimum of fuss and bother. ❑



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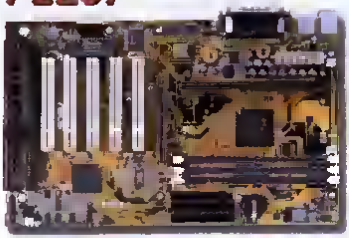
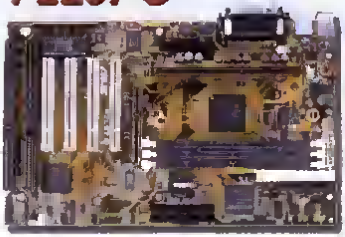
The Latest Platform to Catch the New Wave of 3D & Visual Computing

The Features of P2L97 Mainboards

P2L97



P2L97-S



P2L97-DS

- √ Single or Dual Pentium® II MMX™ Processor
- √ Intel 440LX AGPset
- √ A.G.P.
- √ SDRAM
- √ UltraDMA/33
- √ ACPI Ready
- √ PC97 Compliant
- √ Smart H/W Monitoring

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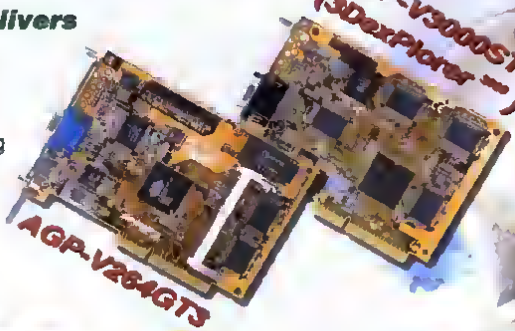
The New Power in 3D & Visual Computing

ASUS AGP Graphics Delivers

- **2X to 4X Faster** Than PCI Data Bandwidth
- **128-bit Graphics** Architecture Gives You Breathtaking Performance
- **Full Function 3D Engine** with Triangle Setup Engine
- **Arcade Quality Performance** for Your PCs



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ASUS P2L97 Mainboards & AGP Accel

ASUS is introducing the new generation of ultrahigh-performance AGP solutions for the latest 3D and visual computing. ASUS P2L97 Mainboard Series, designed for single or dual Pentium® II MMX™ processors, are using the latest Intel 440LX AGPset which not only supports the new graphics bus architecture - AGP (accelerated graphics port), but also enhances the system's data bandwidth by supporting SDRAM and UltraDMA/33. ASUS P2L97 Mainboard Series also meets various new standards such as ACPI - for the latest energy savings, concurrent PCI, PCI 2.1 specification and PC97 compliancy

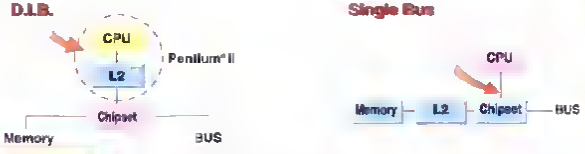
Not just in mainboard field ASUS also leads the industry by announcing the fresh and innovative AGP graphics controller. To unleash the new wave of visual computing technology locked within the Pentium® II MMX™ processor, ASUS delivers the first AGP VGA graphics accelerator. There is no better view of graphics like the graphics quality that AGP delivers. The new AGP technology brings you arcade quality performance, amazing digital video and everything needed for present and future PC-based multimedia applications

Advanced Features of the 440LX AGPset & ASUS P2L97 Mainboard Series

Intel 440LX AGPset -

The Intel 440LX AGPset is the latest chipset to support the new generation of single or dual Pentium® II processors. Intel 440LX AGPset not only introduces the new AGP to improve the bus bandwidth for 3D and visual computing, it also enhances the system performance by adopting the latest SDRAM and UltraDMA/33 technology to make system's performance faster and more balanced

D.I.B. - ASUS P2L97 Mainboard Series are the best platforms for the most powerful D.I.B. (Dual Independent Bus) processors such as Intel Pentium® II MMX™ processor. With the system L2 cache separated from the system bus, the processor can have individual subsystem to fully utilize the processor's power



SDRAM - Synchronous Dynamic Random Access Memory (SDRAM) increases the CPU-to-memory data transfer rate to 528MB/s (Max.) against the traditional EDO memory which has a transfer rate of 264MB/s (Max.). Because of the wider bandwidth, SDRAM can not only increase the system's performance, but can also help the AGP graphics in fetching 3D texture data from the system memory to the processor faster to allow richer and more vibrant 3D contents using a more balanced graphics pipeline.

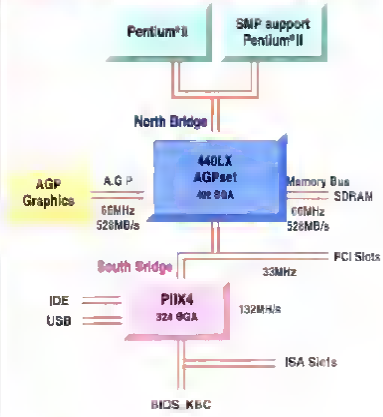
UltraDMA/33 - The Intel 440LX AGPset is now supporting the new Bus Master UltraDMA/33 IDE which can deliver up to 33MB/s data transfer rate. This will reduce the CPU's work load and increase the CPU utilization thus significantly improving the system's performance especially for applications under multitasking operating system such as Windows 95, Windows NT, and OS/2

H/W Monitoring (PC Health Monitoring)

The ASUS P2L97 mainboards are "intelligent," equipped with hardware monitor ASIC to provide the user a brand new function called "PC Health Monitoring." The "PC Health Monitoring" can check the system's hardware status and display warning message when there is a problem with the system hardware. The monitoring features include:

- **CPU and System Fan Alarm:** Warns when a CPU or system fan is not working properly
- **System Voltage Monitoring:** Monitors system voltages (±12V ±5V +3.3V)
- **System Overheat Alert:** Reports system thermal status and warns when temperatures are out of set ranges
- **System Intrusion Detection:** Warns and logs the date and time when the system cover is opened

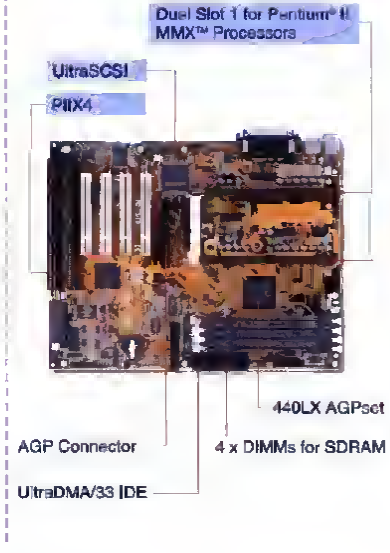
Block Diagram of 440LX AGPset Architecture



Other Advanced Features Include:

- ACPI Ready
- PC97 Compliant
- Optional on Board UltraSCSI

P2L97-DS



erators Bring Your Dream PC to Reality

ASUS AGP

All aboard the latest and fastest graphics technology!

Take a ride on technology that guarantees breathtaking graphics phenomenal 3D rendering and arcade quality performance with ASUS AGP graphics accelerator and mainboard series. With experienced mainboard and graphics R&D teams ASUS once again pioneers technological breakthroughs. This time ASUS introduces AGP. The new bus that allows graphics better and faster than traditional PCI. Designed to perfection ASUS 440LX AGPset-based mainboards provide the essential AGP platforms and graphics accelerators for immediate visuals.. Only ASUS delivers proven AGP platforms and graphics controllers leaving others back at the bus stop. So ride along the AGP express with ASUS. Don't miss the bus!

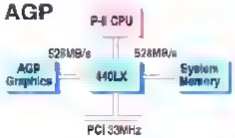
AGP

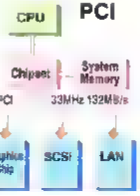
Accelerated Graphics Port (A.G.P.) is a interface specification specifically written to provide an interface for a high performance graphics engine at mainstream prices especially in the area of 3D graphics

AGP uses a connector similar to PCI with 32 bits of multiplexed address and data. While the PCI bus clocked at 33 MHz supports a maximum of 133 MB/s. AGP at 66 MHz yields a surprising 528 MB/s peak. It gets this quadrupled speed in most implementations by transferring data on both the rising and falling edges of the 66 MHz clock. AGP sustains transfers closer to peak values than PCI could because AGP incorporates a few extra signal wires to enable "pipelining" and queuing of requests. Furthermore AGP contains 8 extra "sideband" address lines which allow the graphics chip to issue new addresses and requests simultaneously with the continuing movement of data from previous requests on the main 32 data/address wires

The AGP's higher bandwidth (1.2GB+ of combined peak memory bandwidth) is achieved by utilizing dedicated pipelined access to main memory for faster data transfer rates and cost reduction by moving graphics data to main memory to allow texture storage limited only to the system memory size and freeing up the local memory. Thus allowing AGP interfaces to use system memory for texturing, z-buffering and alpha blending avoid the heavy burden of expensive on-board graphics memory

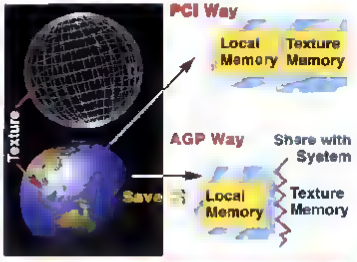
To utilize the benefit of AGP users require OS and drivers such as Win95(OSR2.1 VGARTD VXD from Intel DirectX 5) and NT 4.0 (with Service Pack 3) operating systems





Why You Need AGP

In Order to Enjoy Richer 3D Contents at a Much Lower Cost



The Benefits of A.G.P.

- Balanced graphics pipeline between host and accelerator
- Larger and richer 3D texture maps
- Lower memory cost for 3D graphics

3DexPlorer 3000

AGP Graphics & Video Accelerator

- Maximizes AGP Architecture
- Up to 4X Faster than PCI
- Breathtaking 128-bit Graphics
- Phenomenal 3D Rendering Engine with Triangle Setup
- Arcade Quality Performance
- Computex '97 International Show Award Winner

Key Benefits

- Powerful 3D rendering supports professional graphics design, gaming learning and business applications
- Flicker free crisp realistic images at high refresh rates that reduces eye strain
- Striking cinema-quality video playback
- Peak bandwidth 4X the PCI bus and higher sustained rates via sideband and pipelining
- Direct Memory Execute of textures
- Reduced contention with the CPU and I/O devices for bus and memory access

Enormous Memory Bandwidth

Accelerate into real 3D experiences by producing twice as many bits at once. The ASUS 3DexPlorer 3000 boosts 128 bits of data per clock double the 64 bits current accelerators use. With this wide path to 100MHz SGRAM the 3DexPlorer 3000 delivers 100 million filtered pixels per second fill rate

Lightning Polygon Speed

With a full function 3D engine the ASUS 3DexPlorer 3000 triangle setup engine can draw more than 1.2 million triangles per second

Maximized Multimedia Experience

Scores 255 on 3D Winbench (with 266MHz Pentium® II processor) ultra/high performance for professional and power users

Performance Comparison

440FX + EDO + PCI VGA v.s. 440LX + SDRAM + AGP VGA

AGP cards should be tested like any other graphics card but the true difference can only be seen when a large amount of textures (> 8MB) is used. 3D Winbench now has a scene with large textures good for AGP evaluation

3D Winbench 97 for Windows 95

M/B	P2L97		KN97-X
Intel Media BenchMark	ATI 3D RAGE PRO AGP-133 2MB SGRAM	ATI 3D RAGE II 2MB SGRAM	ASUS PCI V264GT 4MB SGRAM
Test resolution 640 x 480 x High Color			
Polygon Throughput	111	64.8	71.5

Direct3D Benchmark

M/B	P2L97		KN97-X
Intel Media BenchMark	ATI 3D RAGE PRO AGP-133 2MB SGRAM	ATI 3D RAGE II 2MB SGRAM	ATI 3D RAGE II 2MB SGRAM
Test resolution: 800 x 600 x 256 (60Hz refresh rate, small font)			
Polygon Throughput	280.16	278.35	278.77
Test resolution: 800 x 600 x True Color			
Polygon Throughput	202.37	185.07	185.07

Testing Environment

(1) ASUS KN97-X with Intel Pentium® II MMX™

(2) P2L97 with Intel Pentium® II MMX™ 266 MHz CPU with ATI 3D RAGE PRO AGP-133 VGA

- 266 MHz CPU with ATI 3D RAGE II VGA
- 32MB (EDO 32MB * 1), Internal 512KB Cache
- Adaptec AHA-2940UW SCSI Controller
- Seagate ST32171W
- Logitech Serial Mouse

ASUS 440LX AGPset Mainboard Series Specifications

	P2L97	P2L97-S	P2L97-DS
Processor/Cache	Slot 1 for Pentium® II 233 - 333MHz with 512KB Integrated L2 Cache		Dual Slot 1 for Dual Pentium® II Processor 512KB Integrated L2 Cache
Chipset	Intel 82440LX AGPset		
Bus Architecture	AGP/PCI/ISA		
Expansion Slot	• 1 x AGP • 5 x PCI • 2 x ISA	• 1 x AGP • 4 x PCI • 2 x ISA	
AGP Connector	Accelerated Graphics Port Connector Supports AGP 66MHz/133MHz (Sideband) 3.3V Device		
System Memory (ECC Supported)	3 x 168-Pin DIMM for 3.3V SDRAM/EDO Support Total 8MB - 384MB		4 x 168-Pin DIMM for 3.3V SDRAM/EDO Support Total 8MB - 512MB
On Board I/O	• 1 x Floppy Port (Up to 2.88MB, 3 Mode, LS120) • 1 x Parallel Port (EPP, ECP) • 2 x Serial Ports (16550 Fast UART Compatible) • IrDA TX/RX Header		
On Board IDE	Dual Channel UltraDMA/33 Bus Master IDE Supports up to 4 IDE Devices Max. Data Transfer Rate: 33MB/sec IDE Supports: PIO Mode 3 / 4, DMA Mode 2, U-DMA/33, Greater Than 8.4 GB HD, ATAPI IDE CD-ROM		
Switching Power Regulator	Switching Voltage Regulator Supports: 1.8V to 3.5V		
H/W Monitoring	H/W Monitor: Optional LM78 to Support Fan Status, CPU Voltage, System Temperature S/W LANDesk Client Manager to Provide Total S/W & H/W Server or Desktop Managability Solution		
On Board Ultra SCSI	N/A	Adaptec AIC-7880 UltraSCSI Controller 1 x 68-pin High Density Wide SCSI Connector1 x 50-pin Fast SCSI Connector	
ATX I/O Shield Expansion	• 2 x USB Ports • 1 x PS/2 KeyBoard Port • 1 x PS/2 Mouse Port • 1 x Parallel Port • 2 x Serial Ports		
BIOS	1M-bit Flash EEPROM, Award AGP BIOS with ACPI, DMI, Green, Plug and Play Features Plus Symbios SCSI BIOS	2M bit Flash EEPROM, Award AGP BIOS with ACPI, DMI, Green, Plug and Play Features Plus Adaptec SCSI BIOS	
Other Features	ACPI Ready, Soft-off Support, USB Connectors on I/O Shield		
Board Size (ATX Form Factor)	21.2cm x 30.5cm (8.3" x 12")		24.4cm x 30.5cm (9.6" x 12")

ASUS AGP Graphics Controller Specifications

AGP-V3000ST (3DexPlorer 3000)	AGP-V264GT3
• SGS-THOMSON RIVA 128™ 128-bit 2D/3D graphics & advanced video engine • Full function 3D engine with triangle setup up to 1.2Million/sec • 4MB 128-bit 100MHz SGRAM frame buffer supports up to 1.6GB/sec ultra-high memory bandwidth • AGP 1.0 interface • Integrated 206MHz RAMDAC supports up to 120Hz refresh flicker-free display • X and Y up and down video scaling • Drivers support for Windows NT, Windows 95, Windows 3.1 • Acceleration for Windows NT/95 APIs, including Direct3D, DirectDraw and OpenGL	• ATI 3D Rage PRO 64-bit 2D/3D graphics & video accelerator • Enhanced 3D function with triangle setup • Integrated 24-bit 220MHz RAMDAC support refresh rate up to 200Hz • Display memory: 2MB 100MHz SGRAM built-in (up to 4MB Max.) • AGP 1.0 interface • Multi-language user interface & drivers support • Driver & Utility installation CD-ROM supports MS-DOS, Windows3.X, Windows 95, Windows NT, OS/2, Microstation, AutoCAD & ATI Video Player • Software driver supports for Direct3D, DirectDraw & OpenGL interface • High quality TV-out supports NTSC or PAL system through RCA/S-Video jacks in PC97 Spec • H/W MPEG-2 motion compensation

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